Introduction

The IMP unit has been developed to cover the three control functions of Programmable Logic Controller (PLC), motion controller and communication converter (gateway). By means of the programmable logic controller and motion controller functions, the user can control a process through the fieldbus, serial interface and the inputs/outputs, using his own program. The communication converter function enables the data exchange between different field busses: Modbus TCP/IP, CANBus (Canopen), Profinet, EtherCAT and Modbus-RTU. The coexistence of the three functions in a single unit, simplify the automation of a wide range of industrial applications in a simple way, offering an important economic advantage.

Specifications

POWER SUPPLY
24 Vdc - 500 mA max (nominal range 19-30 Vdc)

CPU PROCESSOR
ARM® CORTEX®-M7 32-bit MCU

PLC AND MOTION CONTROL PROGRAMMING
TR.I.P.O.S.GW compatible with Windows OS (EN61131-3 ST)

MEMORY USER PROGRAM
1024K FLASH and 512K SRAM

CANBUS INTERFACE
up 2 electrically isolated, 1 Mbit/s, ISO11898

ETHERNET INTERFACE
1 Modbus TCP/IP 100BASE-TX port

PROFINET INTERFACE
1 port (see versions table)

ETHERCAT INTERFACE
1 port (see versions table)

MODBUS-RTU SERIAL INTERFACES
1 RS485

INPUTS
8 electrically isolated, 5÷24 Vdc - PNP

OUTPUTS
8 protected and electrically isolated, 24 Vdc - PNP

DIP SWITCHES
8 for user configuration

DISPLAY
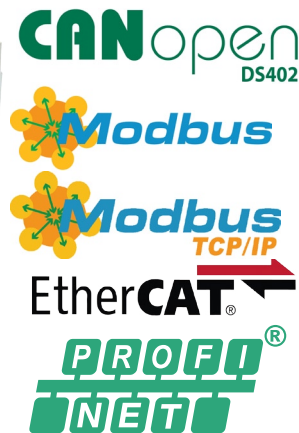7 segment leds display indicating the unit operational status

WORKING TEMPERATURE
5 ÷ 40 ° C

PROTECTION DEGREE
IP20

Characteristics • *Control Mode*

Real-time programmable motion control device for multi-axles systems and advanced solutions

CANopen DS402
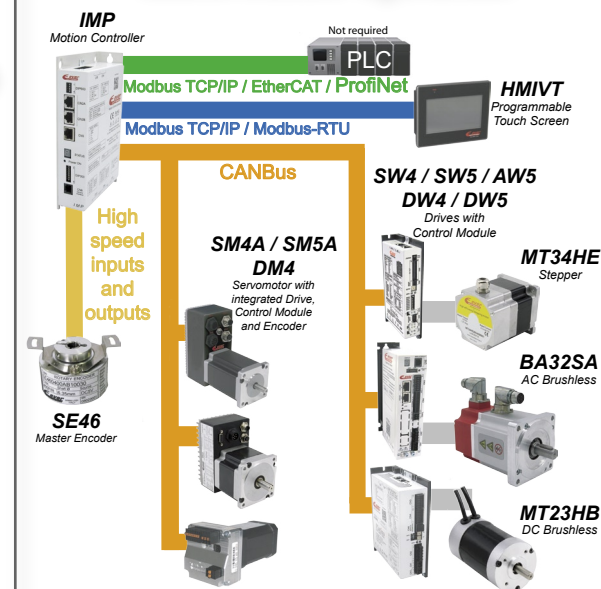Modbus
Modbus TCP/IP
EtherCAT
PROFINET®

WARRANTY 3 YEARS

IMP
Gateway, PLC and Motion Controller

√ Easy programmable

√ Local control of connected devices

√ Execution speed and real-time axles management

√ Data exchange between field busses
  (Modbus TCP/IP --> EtherCAT ---> Profinet ----> CANbus)

Multi-Axles Systems

IMP Motion Controller
Not required PLC
Modbus TCP/IP / EtherCAT / ProfiNet
HMIVT Programmable Touch Screen
Modbus TCP/IP / Modbus-RTU
CANBus
High speed inputs and outputs
SE46 Master Encoder
SM4A / SM5A DM4 Servomotor with integrated Drive, Control Module and Encoder
SW4 / SW5 / AW5 DW4 / DW5 Drives with Control Module
MT34HE Stepper
BA32SA AC Brushless
MT23HB DC Brushless
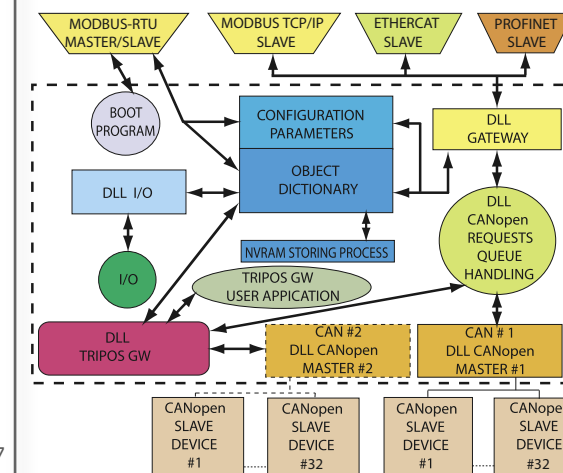
Thanks to the T.R.I.P.O.S.GW programming environment it's possible to personalize the machine cycle and to manage all drives and local resources, diminishing and simplifying the work load of the master PLC if present.

Block Diagram

Functional schedule of the firmware and system resources.

MODBUS-RTU MASTER/SLAVE — MODBUS TCP/IP SLAVE — ETHERCAT SLAVE — PROFINET SLAVE

BOOT PROGRAM
CONFIGURATION PARAMETERS
DLL GATEWAY
DLL I/O
OBJECT DICTIONARY
I/O
NVRAM STORING PROCESS
TRIPOS GW USER APPICATION
DLL CANopen REQUESTS QUEUE HANDLING
DLL TRIPOS GW
CAN #2 DLL CANopen MASTER #2
CAN # 1 DLL CANopen MASTER #1
CANopen SLAVE DEVICE #1
CANopen SLAVE DEVICE #32
CANopen SLAVE DEVICE #1
CANopen SLAVE DEVICE #32

High-level structured language in compliance with the IEC1131-E (ST) standards allowing a wide access to the hardware resources by means of the IMP being open to extensions of the user functions with protection.

PLC Functions
- Instructions user program written in structured text;
- Logics / Boolean (and, or, not, neg, com, shl, shr, xor, ...);
- Comparison (if ... then ... else);
- Loop (while ... do ... end_while, for ... do ... end_for);
- Management subroutines (call, ret)
- Management interrupts (define_int, int, int_var, ret_int)
- Management errors (on_error, resume)
- System multitasking owner (up to 64 tasks)

Gateway Functions
- CANopen (read_obj, write_obj, read_sdo, write_sdo, send_pdo);
- ProfiNet (write_profi_out, read_profi_in);
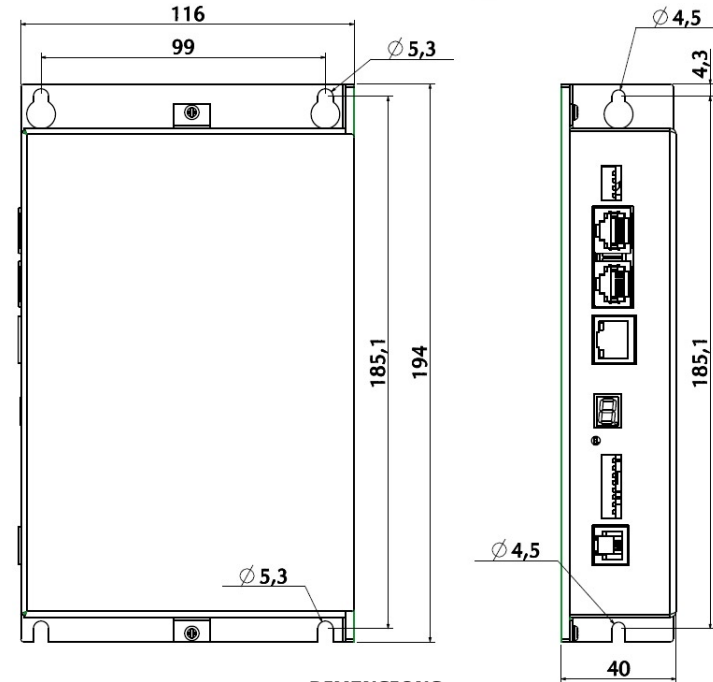- Modbus (master-slave RTU);
- EtherCAT;
- Modbus TCP/IP;

Motion Control Functions
- Refreshing Time of 1 ms;
- Management CAMs;
- Calculation variables with real/integer numbers;
- Trigonometry (cos, sin, log, tan, sqrt, ...);

Other Functions
- Saving data on nvram battery
- Real-time internal clock (date, hour, minutes, seconds);

TR.I.P.O.S.GW is available on 5 different licence levels depending on the need and the dimensions of the generated and compiled program:
- The DEMO licence can be used for programs with a maximum dimension of 8 KB;
- The LIGHT licence can be used for programs with a maximum dimension of 32 KB;
- The BASIC licence can be used for programs with a maximum dimension of 64 KB;
- The ADVANCED licence can be used for programs with a maximum dimension of 128 KB;
- The FULL licence has no limits regarding the dimension of the generated program (256 KB is the limit determined by the hardware characteristics).

DIMENSIONS
194 x 116 x 40 mm

Ordering Information for the IMP controllers

Ordering code					System Resources								
					Fieldbus / Interface						Digital Inputs	Digital Outputs	Dip Switches
Versions	Configuration	Connector kit	Software kit	Power supply	CAN1	CAN2	Ethernet	Serial	EtherCAT	Profinet			
IMPW1100	c1000				1	1			---	---			
IMPW21H0	c1000	IMPWKIT-C0	IMP_SERV10_TRP	24Vdc (500 mA max.)	1	---	1 Modbus TCP/IP 100 BASE-TX	1 Modbus-RTU RS485	1	---	8	8	8
IMPW11T0	c1000				1	1			---	1			