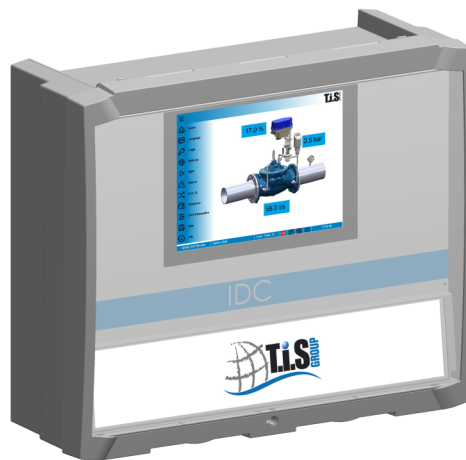# IDC

Smart and compact microcontroller:

self-powered version.

IDC

Smart and compact microcontroller

T.I.S. IDC is the compact, smart and flexible microcontroller, available with integrated cloud connectivity: controlling and viewing your application just got easier.

T.I.S. IDC is designed to manage automatic diaphragm/piston control valves and needle (plunger) valves, with an open, modular system and with pre-loaded applications for the main control functions which can be customized by the end user.

The range of applications that can be created with T.I.S. IDC becomes more versatile than ever. The VPN connection for remote desktop/webserver and debug/program update is integrated via pre-installed software service.

T.I.S. IDC allows to send alarms via email or SMS, such as flood signals, threshold exceedances, etc. The functions can be various and configurable according to needs.

Valve control is finally open and based on curves or set-points that can be configured in a simple and intuitive way. The multiple PID type regulators with self-tuning allow accurate positioning of the actuators and digital outputs (controls on solenoid valves).

The operating logic is created with intuitive IEC 61131-3 standard languages:
"Function Block Diagram" (FBD) or "Ladder Diagram" (LAD).
The availability of multiple analog and digital inputs allows for maximum adaptability of T.I.S. IDC to various regulation applications.

The microcontroller is contained within a sturdy ABS box for wall installation, IP68 certified for immersion at 1.2m (2h), NEMA 3.
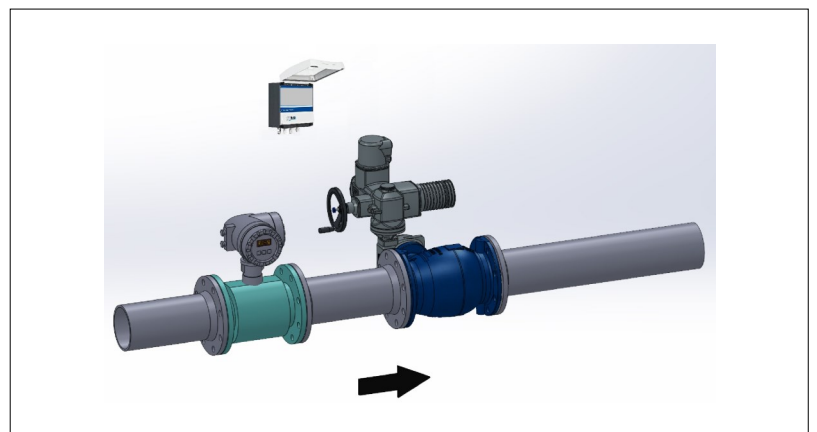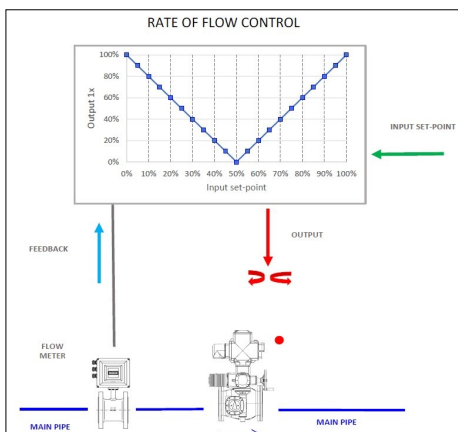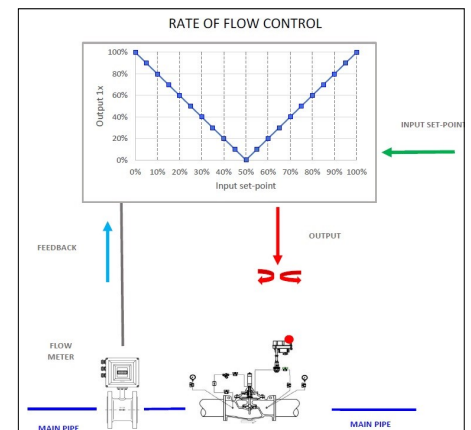
In this version, the power supply is made by a battery pack (with a capacity of 9-45Ah) which is charged by a microturbine usually installed in the pipe or in the automatic valves circuit.

Main control functions:

- Rate of flow control;

- Rate of flow control based on supplied tank level;

- Blending;

- Pressure control;

- Pressure control based on flow rate and/or critical point;

- Opening degree regulation.
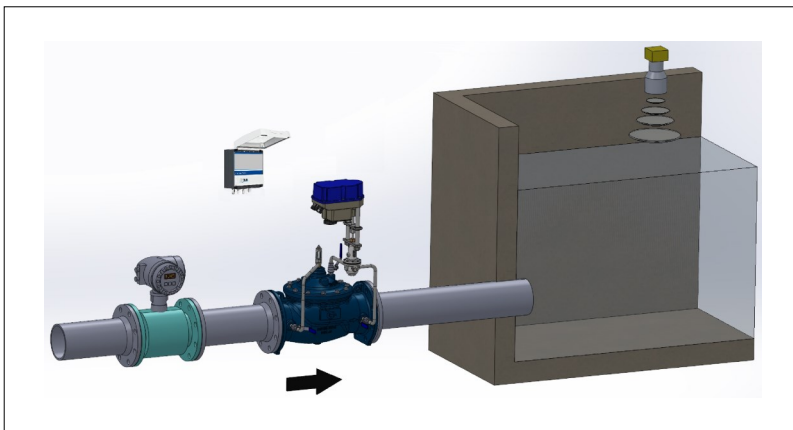
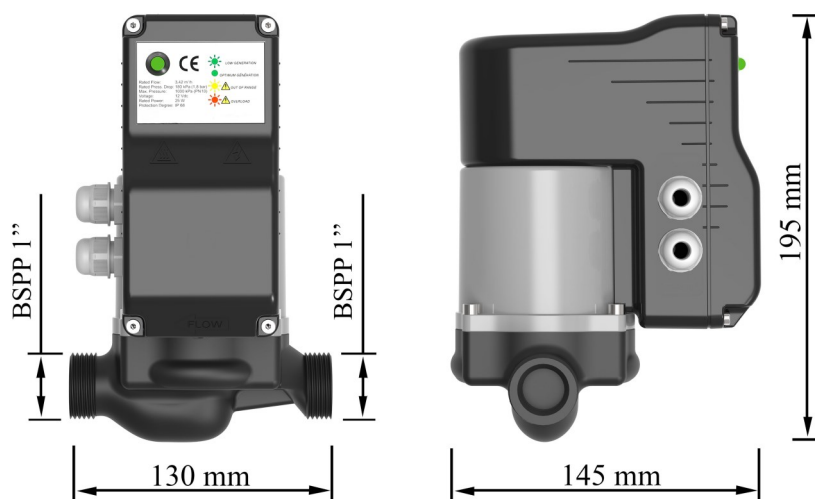*Rate of flow control according to tank level via automatic control valve.*

Rate of flow control via needle (plunger) valve

| Technical specifications	
Power supply	12-24 VDC ±15% - galvanic isolation 2.5kV Consumption 7.5 Watt/VA (HMI) - 6.5 Watt/VA (Router) 3V lithium battery for BIOS and system clock
Display	4.3" TFT touch screen LCD display, resolution 480x272 pixels - 16:9 format, 260k colours (16 bit), 280 cd/m2, typical lighting duration 20000h @ 25°C, integrated 4-wire resistive touch
Environmental conditions	Enclosure protection rating IP68 Temperature range 0 .. 50°C
Digital Inputs/Outputs	8 configurable and expandable digital inputs 8 relay outputs x 6 A each, extractable and individually replaceable
Analog Inputs/Outputs	4 universal analog inputs RTD/4..20mA/0..10V configurable and expandable 2 configurable and expandable analogue outputs 4..20mA/0..10V
Memory	eMMC 2 GB / RAM 512 MB DDR3
Main features	HMI Embedded Compact Real-Time clock with Back-up battery Configurable data logging from 1s and log files Portal VPN - Remote Control and Assistance tool Freely programmable alarms or actions on events Unlimited number of control curves Configurable unit with multiple decimal points Analogue outputs with adjustable ramp Input signal filtering Input for totalizer Configuration curves Manoeuvring auxiliaries for emergency manual controls (optional)
Control parameters	PI(D) regulators with configurable control parameters Freely configurable control ramps Password protected multi-user access
Communication	1 x Industrial Ethernet Port 10 / 100 Mbit/s 1x RS485 / CAN opto isolated 1 x USB 2.0 Integrated VPN/WEB Server 1 Industrial WiFi Router – GSM/GPRS 4G LTE (cat.4), 3G, 2G (optional) 1 4G GSM antenna (optional) 1 WiFi antenna (optional) Cloud communication via optional 4G network (optional)
Safety certifications and stand-ards	HMI UL 61010-1, 3rd Edition, May 11, 2012, Revised April 29 2016, CAN/CSA-C22.2 No. 61010-1-12, 3rd Edition, Revision dated April 29 2016 Routers - EN IEC 62311:2020, EN 50665:2017, EN IEC 62368-1:2020+A11:2020, IEC 62368-1:2018

TURBINE FOR BATTERY PACK CHARGING

ELECTRICAL SPECIFICATION	
GENERATOR TYPE	Brushless
NOMINAL OUTPUT VOLTAGE	12 V
MAXIMUM OUTPUT CURRENT	2A
MAXIMUM OUTPUT POWER	25W
ALLOWED BATTERIES	Lead-acid Sealed
ALLOWED BATTERIES CAPACITY	9-45Ah
OUTPUT CONTROL	Output for EV contrai latch type of 2 wires
STATUS SIGNALLING	Built in status led light. Status digitai output (1), free potential transistor output (suitabie for PLC or datalogger inputs)
MINIMUM VOLTAGE OF BATTERY V1	10,5V
TIMEO IGNITION VOLTAGE V2	12,5V
INSTANT IGNITION VOLTAGE V3	12,3V
MINIMUM FULL-CHARGED VOLTAGE V4min	14,6V
MINIMUM FULL-CHARGED VOLTAGE V4max	15,0V
MINIMUM OPERATION TIMING T1	20 minutes
SECURITY TIMING T2 (timed ignition)	5 minutes

HYDRAULIC SPECIFICATIONS	
NOMINAL PRESSURE	10 bar (PN10)
MINIMUM PRESSURE INLET-OUTLET	0,45 bar
MAXIMUM PRESSURE INLET-OUTLET	1,8 bar
ABSOLUT MAXIMUM PRESSURE INLET-OUTLET ΔPMAX	2,0 bar
MINIMUM FLOW	0,5 litres/second
MAXIMUM FLOW	0,95 litres/second
ABSOLUTE MAXIMM FLOW QMAX	1,0 litres/second

Operating Range Curves
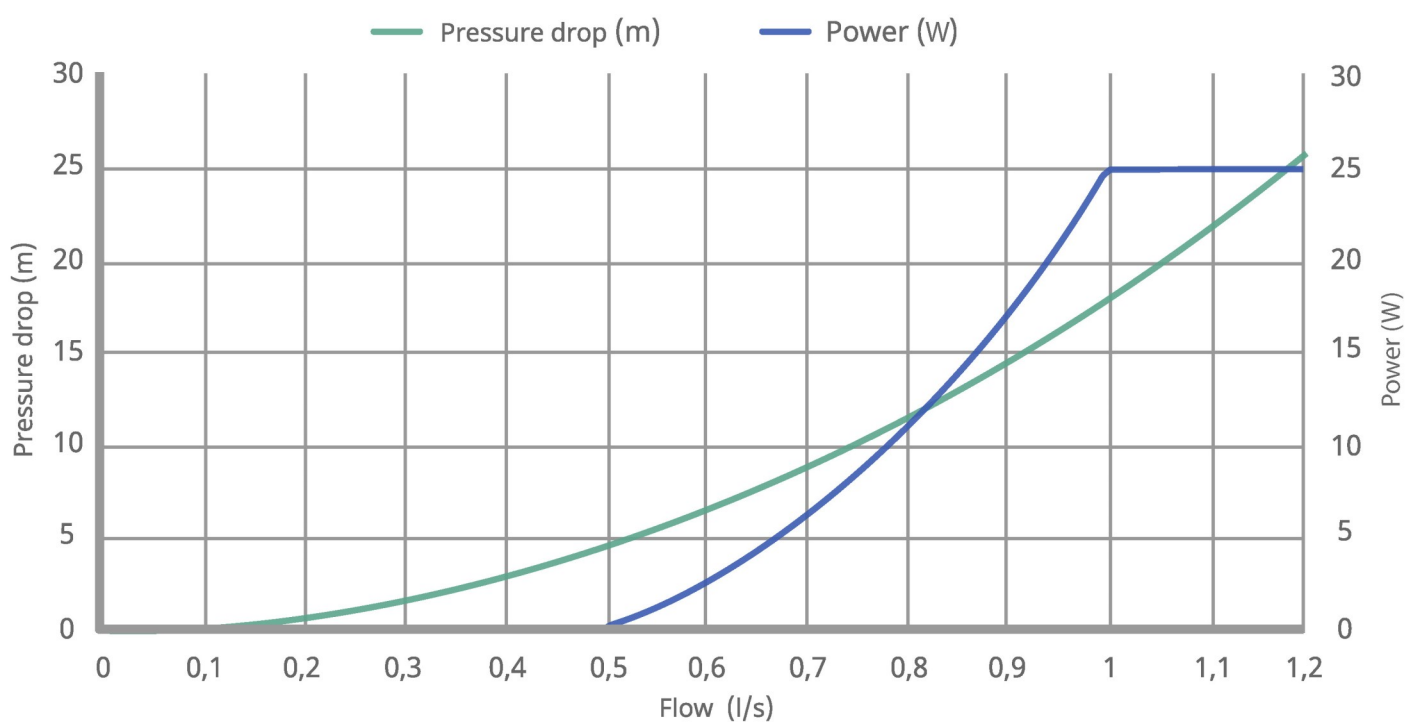
MECHANIC SPECIFICATIONS	
IP CODE	IP68
INLET / OUTLET DIMETER ANO THREAD	15 mm, BSPP 1"
FREE PASSAGE OF SOLIDS	Maximum 1 mm
NETWEIGHT	2,7 kg
DIMENSIONS	130x145x195mm
MATERIALS	
HYDRAULIC BODY	Steel foundry
IMPELLER	Noryl
ROTOR	Stainless steel AISI 316
SEAL / GASKET	EPDM
AXIS	Ceramic
BEARINGS	Ceramies refrigerated by the fluid
PROTECTIONS	
BATTERY CUT OFF (low battery protection)	10.SV
OVERVOLTAGE	Electronic protection
GENERATION OVERLOAD	Fuse n.1 of 500mA
OVERCURRENT, SHORT-CIRCUIT ELECTROVALVE	Fuse n.2 de 2,5A
OVERCURRENT, BATTERY SHORT-CIRCUIT	Fuse n.3 of 3A
REDUCTION OF POWER DUE TO HEATING	Depending on battery voltage and ambient temperature
ENVIRONMENT CONDITIONS	
WORKING TEMPERATURE	-20 to +60 °C (power reduction from 50 °C)
WORKING HUMIDITY	10 - 90 % non-condensation
REGULATION	
216/42/CEE, 2004/108/CEE, 2011/65/CEE, UNE EN 12100-1/2, UNE EN 14121-1/2007	