

# TCP-IP DCTU DATA CONCENTRATOR AND TRANSCEIVER UNIT

## SYSTEM OVERVIEW

### ON SHORE DATA CONCENTRATOR AND TRANSCEIVER UNIT

The TCP-IP Data Concentrator and Transceiver Unit (Envirtech TCP/IP/DCTU) is a multipurpose intelligent device designed for remote operation of Envirtech data buoys, tide gauges, meteorological stations (AWS Automatic Weather Stations) and other SCADA devices to implement a complete solution to receive and transmit data via VHF, UHF, W-LAN, GPRS/EDGE and Satellite networks. Each unit is composed of the pre-selected Radio-Modem implementing the radio communication segment, controlled by a microcomputer programmed to decode in-field collected data and to send commands toward the field. The unit can be connected to a local or remote Control Centre via TCP-IP and embeds a secure FTP and an HTTP server for data interchange and remote maintenance. Each unit has a unique ID to allow a multi station data network.

The Data Concentrator is also available for outdoor use and can be mounted in field, powered by solar panels, to be used as data relay or distributed data logger and command unit.



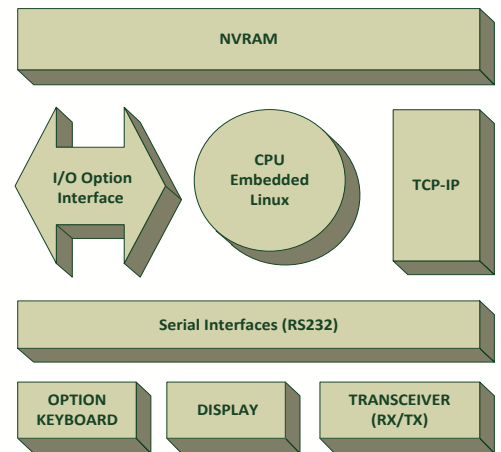
### TECHNICAL DESCRIPTION

The unit is available in two configurations, indoor for desktop applications or rack mounting and outdoor, to be mounted in field, powered by solar panels. The unit is composed of following main parts:

- RF - Radio Frequency modem. Its configuration depends on the user choice at order time. Available Radio Frequency Bands are : VHF, UHF, GPRS/EDGE, Inmarsat mini-C, Iridium, W-LAN
- CPU: it consists of a low power consumption RISC processor, embedding a LINUX operating system able to manage serial lines, USB ports, Ethernet communications and a 32 GB NVRam. An optional keyboard can be added to complete the user interface in case of standalone applications. The Ethernet port can be connected to a Local Area Network implementing a powerful monitor and command system.
- Power supply
- As Option, a multi Analog/Digital I/O interface can manage local sensors

Data collected (locally or received via Radio) are pre-processed and formatted in files that can be downloaded by user clients or procedures using the FTP protocol. In bundle with the remote software *envHYDRO* it is possible to implement a very powerful low cost SCADA system.

As option, the unit can collect local data from sensors like meteorological sensors, tide gauges and so on. The unit, can also command local payloads like relays, motors, pumps, valves implementing PID regulations and so on.



### WHAT IS SCADA

SCADA (supervisory control and data acquisition) generally refers to industrial control systems (ICS): computer systems that monitor and control industrial, infrastructure, or facility-based processes.

### WHAT IS TCP-IP

TCP/IP (Transmission Control Protocol/Internet Protocol) is the basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet).

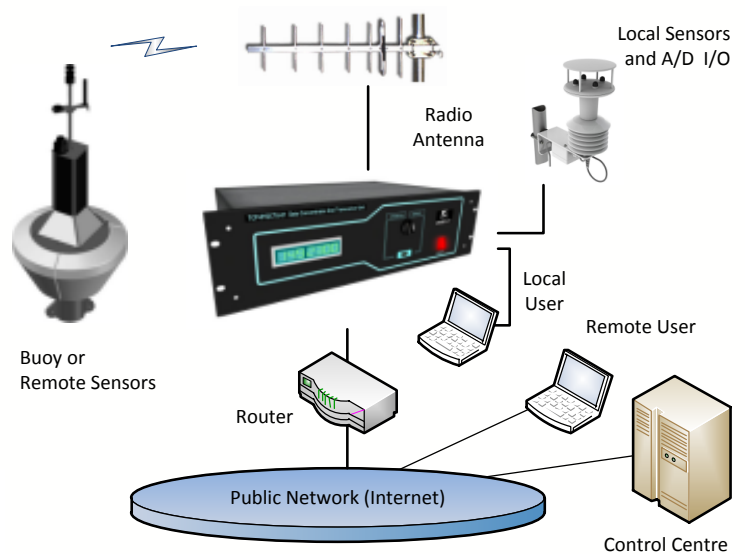
### WHAT ARE FTP AND HTTP

HTTP - Hypertext Transfer Protocol is the protocol used by the World Wide Web to access web pages. It is used for remote control of the transceiver and collected data. FTP - File Transfer Protocol is used to request or upload files from/to the transceiver and download it onto the client.



Envirtech is a private Italian company that is completely owned by its management. It invests more than 30% of annual revenue in research. Envirtech manufactures according to strict standards of quality control and is ISO9001- 2000 certified.

GENERAL INFORMATION (INDOOR CONFIGURATION)	
<b>Indoor Rack</b>	19" 3U - 466 x 423 x 123 mm
<b>Construction</b>	Stainless still, Aluminum front panel
<b>Weight</b>	3 Kg
<b>Operational Temperature</b>	-5°C +55°C (standard)
<b>Operating Voltage</b>	85 .. 264 Vac 47 .. 63 Hz
<b>Power consumption</b>	RX: 2.6 Watt – TX: 8 Watt Max (depending on selected power)

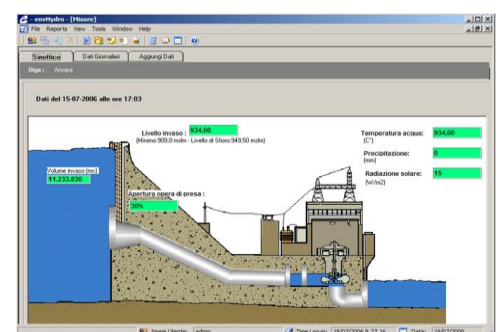
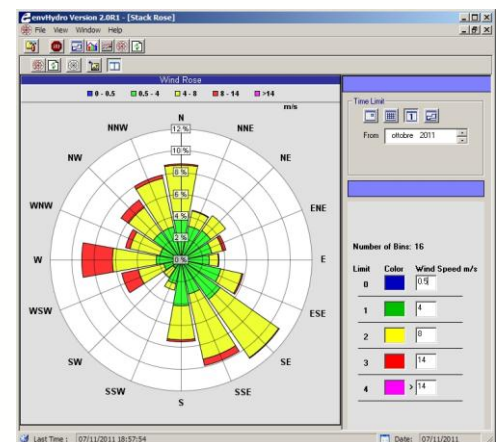
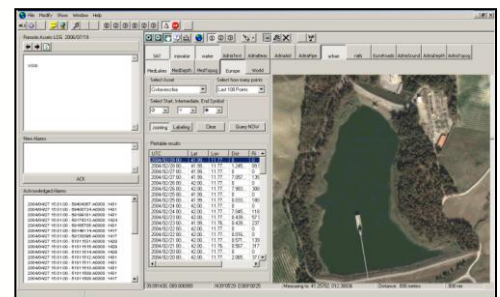


VHF – UHF TRANSCEIVER – Default Configuration	
<b>Frequency Range</b>	138 .. 174 MHz 218 .. 238 MHz
<b>Channel Spacing</b>	12.5 KHz / 25 KHz
<b>Number of Channels</b>	1760 MAX
<b>TX MODE</b>	HALF-DUPLEX
<b>TX Carrier Power</b>	From 100 mW to 5W / 50 ohm
<b>RX Sensitivity</b>	< -115 dbm (BER < 10 E-3)
<b>Radio Data Speed</b>	19200 @ 25 KHz / 9600 @ 12.5 KHz
<b>Antenna Conn</b>	TNC, 50 ohm female
The equipment complies with the EN 300 113-1, EN 301 489-1, -5, EN 60950- 1 and FCC CFR47 section 90 specifications	
OPTIONS	
Inmarsat mini-C, Iridium, GPRS/EDGE, WI-FI	

Best performances of the TCP-IP/DCTU can be obtained using the Envirtech SCADA software *envHydro*. The user can manage, by a centralized position, many sensors and actuators everywhere located in the world. On the right the screenshots show a typical application of *envHydro* and many control units deployed in field for dams remote control.

When used to receive data from Envirtech Buoys and weather stations the unit can be programmed to process collected data and to show them on the local display. The software *envHydro*, running on a local PC, can also be used to show collected meteorological and oceanographic data, as well as sea waves spectra and 3D currents.

The outdoor configuration can be used to collect data coming from area not covered by public networks, using VHF or UHF communications and relaying them on a public network, like cabled xDSL-ADSL, WAN or Satellites.



CPU	
<b>Microprocessor</b>	32 Bit – RISC – Embedded Linux
<b>NV-RAM</b>	32 GByte
<b>User I/O</b>	2 x RS-232 /422 /485 GB 2 x USB + 1 Ethernet Option additional 6 x RS-232
<b>Analog Channels</b>	Option up to : 8 IN – 4 OUT
<b>Digital Channels</b>	Option up to: 96 IN – 48 OUT
<b>User Interface</b>	LCD Display + Option Keyboard RS-232 DB9 Ethernet LAN 10/100
<i>Specifications can change without notice</i>	