



Tank Inventory Management Systems

Communication Interface Unit 133-550



FEATURES

Real-time, on-line, indication of level in mm and temperature in °C (with tank number) for up to 64 tanks

Input from SBEM Smart Tank Data Transmitter, Servo Gauge & Radar Gauge

Alternative indication of alarm and diagnostic data

Alternative indication of interface level and density (in case of Servo Gauge)

Keyboard for operator interface and programming of alarms, date/time and autoprinting intervals

Additional keys for full operator access to Servo Gauge functions, including calibration

Interface with IBM compatible PC-AT and standard dot matrix printer on RS 232C serial interface system to form a complete Tank Inventory Management System

In-built user programmable alarm annunciator for 4 level and 1 temperature alarm per tank

Leak alarm with programmable rate

Optional, programmable, open collector alarm outputs, relay contact outputs and current outputs for control action

Microprocessor based circuit with in-built diagnostics

INTRODUCTION

The Communication Interface Unit (CIU) is an intelligent microprocessor based control room instrument and uses the most sophisticated digital technology presently available for interfacing field transmitters* to IBM compatible PC-AT in the control room loaded with SBEM Tank Inventory Management Software (SBTIS), to form a complete Tank Inventory Management System.

ASCII coded tank parameter data* from 16 field transmitters (expandable upto 64) is decoded by the CIU and displayed / transmitted to a computer and/or printer.

It also functions as a stand alone unit for real time monitoring of tank level, temperature, interface level and density.

Level, temperature and alarm data with date & time can be directly printed on a standard dot matrix printer (with serial interface card).

In-built audio visual alarm annunciator provides annunciation of 4 level and 1 temperature alarm per tank.

In-built keyboard provides operator interface for all functions of Servo Gauge and for programming of alarms, date / time and auto printing intervals.

* FIELD TRANSMITTERS	TANK PARAMETER DATA TRANSMITTED
Smart Tank Data Transmitter	Level & temperature
Servo Gauge	Level, temperature, interface level & density
LPG Servo Gauge	Level, temperature, interface level, density, vapour pressure, vapour temperature, liquid volume, liquid equivalent of vapour volume, mass of liquid & vapour and total mass

CONSTRUCTION

Housed in a 19" full rack (card frame) it consists of following cards

1. CPU + Serial output card (with RTC & NOV RAM)
2. RS 485 card
3. Power supply unit
4. Mother bus
5. Keyboard and display interface card

Additional slots are available for alarm / current output cards. These circuits are modular to ease installation, maintenance & upgradation.

OPERATION

ASCII coded tank data from instruments is decoded and displayed on in-built display.

Level, temperature, interface level, density, alarm status & diagnostics are transmitted to computer on RS 232C port in ASCII for monitoring, logging & report generation.

Keyboard facilitates the operator to select a particular tank for display & full function control of Servo Gauges including calibration from the control room.

Alarm, date / time & auto printing intervals are easily programmed by operator on the keyboard the display prompts the operator to input information.

VARIANTS

A. LPG Communication Interface Unit (LPG CIU)

To enable display of pressurised liquid inventory parameters from LPG Servo Gauge & printing on printer.

B. Single Tank Indicator (STI)

Tank/Transmitter dedicated interface unit in 19" half rack.

C. Repeater Display Unit (RDU)

To enable display of tank data at other location/ locations. One or more units for each bus, acting as one more field transmitter.

ACCESSORIES

1. Isolation and Termination Unit (ITU)- standard

Back of panel mounting. Provides isolated power supply to Smart Tank Data Transmitters and/or Servo Gauges in the field. Enables termination of power and signal cables from field transmitters. Has a D9 connector plug which connects to RS 485 card of CIU.

One unit is required for every 16 Smart Tank Data Transmitters or 8 Servo Gauges.

2. CIU to computer connector (15M long) - standard

3. CIU to printer connector (15M long) - standard

(This connection requires a serial interface card in the printer.)

4. Relay Panel Assembly (RPA) - optional

Provides potential free relay changeover contacts rated 6A @ 230VAC/28VDC (Resistive) - 12 relays per panel. Maximum 4 RPAs - 48 relays for each CIU / RDU.

5. Current Output Panel (COP) - optional

Provides isolated 4-20 mA DC current outputs (load 750 maximum), 8 outputs per panel. Maximum 2 COPs - 16 outputs per CIU / RDU.

6. MODBUS Adapter Unit (MAU) - optional

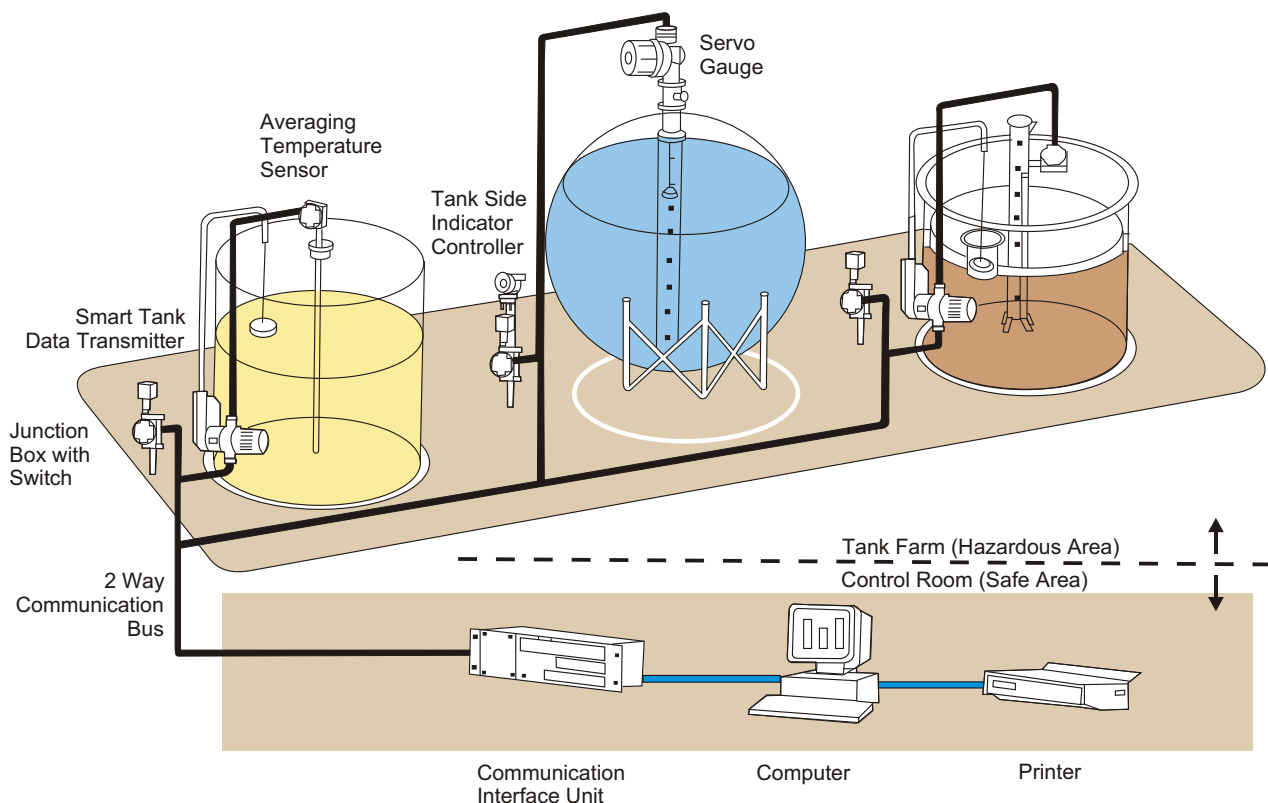
For interfacing to supervisory systems e.g. DCS, LRC, SCADA, PLC, etc. Converts SBEM proprietary protocol in to MODBUS RTU protocol.

7. Radar Gauge Adapter (RGA) - optional

For converting signal from Radar Gauges of other makes and interfacing them with SBEM CIU and TIMS.

8. Communication Modus Adapter (CMA) - Optional for Interfacing to Supervisory system e.g DCS,SCADA,TFMS Software, Host computers through MODBUS RTU protocol - 4 Port RS485 MODBUS interface to CIU.

TYPICAL TANK INVENTORY MANAGEMENT SYSTEM



SPECIFICATIONS

CIRCUITRY

Microprocessor based

CPU	: Z-80, 4 MHz
RAM	: 8K Battery backed
RTC	: In-built

LEVEL AND TEMPERATURE INDICATION

Input / output / command	: ASCII coded signal from/to SBEM Smart Tank Data Transmitter, Servo Gauge and from Radar Gauge on a 2 way / 2 wire RS 485 bus
Display	: 11 digit, 1/2" high 7 segment LED to simultaneously display - CIU connection no. (2 digit) - Level in mm (5 digit) - Temperature in °C (4 digit) Alternative indication of interface level and density (in case of Servo Gauge)
Data update	: Less than 2 seconds

COMMUNICATION

With STDT & / or Servo Gauge	: On RS 485 port Baud rate 1200 (standard) 2400 (optional)
With computer*	: On RS 232C port Baud rate 2400 (standard) 4800 (optional)

* IBM compatible PC-AT minimum

With printer*	: On RS 232C port Baud rate 1200 (fixed)
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* Dot matrix printer with serial interface card

PROGRAMMING AND OPERATOR INTERFACE

In-built keyboard with 13 keys for operator interface - to select tank no. for tank data display and programme alarms, date / time, auto printing time interval.

7 additional keys provide operator full access to the Servo Gauge functions.

ALARM ANNUNCIATION (IN-BUILT)

Level alarms	: Programmable 4 alarms per tank - LL, L, H and HH
Temperature alarm	: Programmable 1 alarm per tank - TH
Leak alarm	: Programmable rate

Alarm annunciated on display - display flashes showing tank no. and alarm type. On acknowledging alarm through keyboard, display returns to normal tank data display. Alarm values are stored in non-volatile RAM.

ALARM OUTPUT (OPTIONAL)

Programmable open collector outputs for alarms in multiples of 12, maximum 48.

Each output can sink 50 mA (maximum) at 24 VDC.

CURRENT OUTPUT (OPTIONAL)

Maximum 16 outputs - 4-20 mA DC, isolated, proportional to level or temperature (upscale / downscale on error) - programmable

Maximum load	: 750
Level span	: 3640 mm (minimum)
Temperature span	: 10° C (minimum)

POWER SUPPLY

110/230 VAC, ±10%, 50 Hz, 1 , 67 VA

CABLING

From STDT & / or Servo Gauges in field to ITU in control room.

Up to 16 transmitters can be looped on single cable loop.

Power (110 VAC) : 2 core, 1.5 mm² copper / 2.5 mm² Copper

Signal (RS 485) : 2 core (1 twisted pair)
1 mm² Copper
Rmax 200 1 F
Cmax 1 F

Distance : Up to 1200 Mtrs. (More distance possible with Line Drivers)

PROTECTION

Opto isolators provide galvanic isolation between input / output terminals and internal circuitry.

Surge protection using Metal Oxide Varistors.

SELF DIAGNOSTICS

In-built on-line diagnostics checks transmitted signals and displays error messages.

Off-line diagnostics checks internal circuitry.

Surge protection using Metal Oxide Varistors.

SELF DIAGNOSTICS

In-built on-line diagnostics checks transmitted signals and displays error messages. Off-line diagnostics checks internal circuitry at chip level and displays error messages.

ENVIRONMENT

Ambient operating temperature : 0 to + 50° C

Relative Humidity : 95% maximum, non-condensing

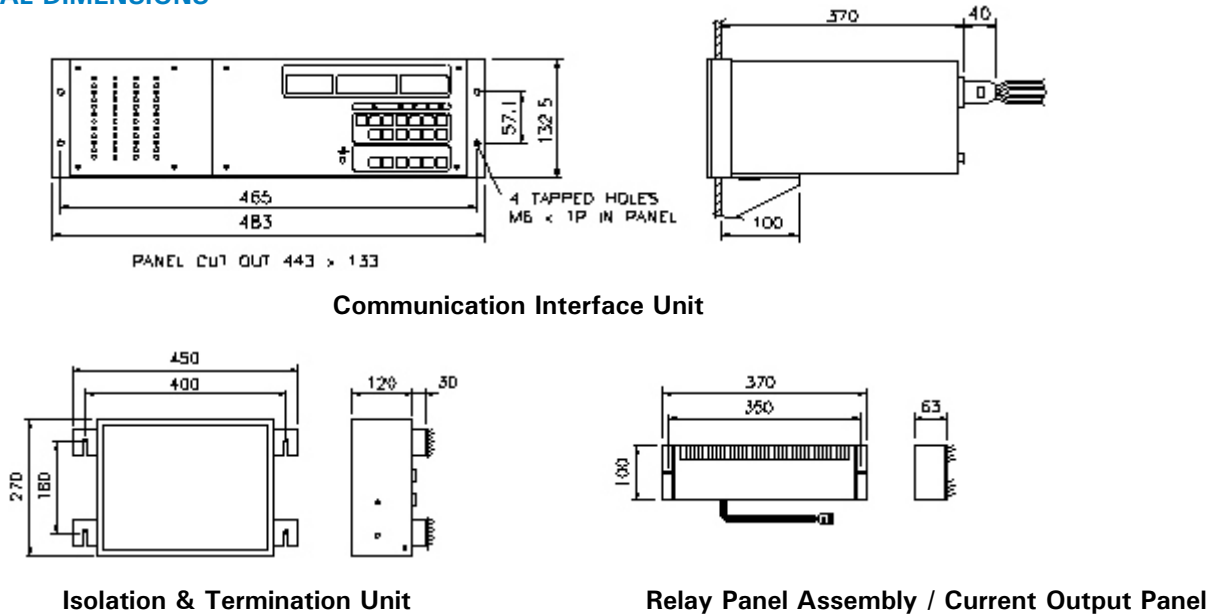
MOUNTING & ENCLOSURE

Table top / flush panel mounting, enclosure 19" full / half rack - IP 30

ORDERING INFORMATION

MODEL		COMMUNICATION INTERFACE UNIT				
133-550		CODE	TYPE OF TANK FARM INSTRUMENTS			
		1	Smart Tank Data Transmitter (STDT)			
		2	Smart Tank Data Transmitter and / or Servo Gauge			
		CODE	NO. OF INPUTS			
		1	16 nos.			
		2	32 nos.			
		3	48 nos.			
		4	64 nos.			
		CODE	NO. OF ALARM OUTPUTS (OPEN COLLECTOR)			
		0	No alarm output			
		1	12 nos.			
		2	24 nos.			
		3	36 nos.			
		4	48 nos.			
		CODE	POWER			
		1	110 VAC			
		2	230 VAC			
		CODE	NO. OF CURRENT OUTPUTS			
		0	No current output			
		1	04 nos.			
		2	08 nos.			
		3	12 nos.			
		4	16 nos.			
133-550	2	1	0	1	1	TYPICAL MODEL NO.

MECHANICAL DIMENSIONS



*** Continuous development may necessitate changes without notice.

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