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CDU

Clean Room Display Unit

Masibus model CDU Clean Room Display Unit is designed to measure and display temperature, humidity and differential pressure in one compact enclosure.

CDU Clean Room Display Unit accepts analog input from temperature, humidity and differential pressure sensors, optionally the sensors for all 3 parameters are integrated inside for ease of use & installation. CDU is also available in remote sensor with 10 meter cable option for RH + T measurement

CDU is available in two display options either 4 digit 0.56" red seven segment displays to indicate temperature, %RH and DP individually or 3.5" TFT LCD, CDU with LED display option has individual LEDs for status indication for all three channels. High and low alarm LED indications are settable using programming modes. One no potential free digital input for door status available in CDU with LCD option.

CDU has inbuilt buzzer for audible process value violation. Data acquisition can be done on SCADA/ PLC application through RS-485 using Modbus protocol.

CDU-LED version optionally also accepts humidity and temperature input through wireless zigbee network from Masibus make HT16Ew humidity & temperature transmitter.

Designed using proven micro-controller technology, this clean room display unit has been validated to perform accurate and reliable performance in harsh field environment.

Features

- RH, Temperature and DP measurement
- Advanced digital RH+T sensor technology
- Calibration not required for digital RH+T sensor
- Internal sensor option (Ease of installation)
- Remote sensor option for RH+T measurement
- Available in LED and touchscreen TFT LCD display options
- 3 programmable alarms with visual annunciation
- Software programmable channel ranges, units & input types
- Real time clock with battery back-up
- Synchronized with server clock over RS485
- Data backfilling via DNP 3.0 avoiding data loss (optional)
- RS485/MODBUS RTU multidrop communication for PLC, SCADA etc.
- FDA 21 CFR part11 compliant SCADA version also Datalogging
- Optional Wireless connectivity available in LED version (with HT16Ew model)
- Touch Sensitive keypad for CDU-XP
- CDU-XP is suitable for gas group IIA and IIB, Zone 1&2 and IP55 as per IS/IES 60529-2001

Applications

- Pharmaceutical industry
- HVAC (Heating, ventilation, air conditioning, cooling)
- Blood stations, pharmacies
- Horticultural and cultivation of plants
- Pharma Environments monitoring applications
- Data acquisition, analysis and processing

TECHNICAL SPECIFICATIONS

Input

Input Sensor Type

Input Type	Differential Pressure (DP)	Humidity (RH)	Temperature (T)
Integral	✓	✓	✓
Analog (4-20mA/ 0-10VDC	✓	✓	✓
Remote Sensor with Cable	✗	✓	✓
Wireless	✗	✓	✓
Measurement Range			
Integral▲	±125 Pa, ±500Pa, ±1000 Pa 0-125 Pa, 0-500Pa, 0-1000 Pa	0-100%RH	0 to 60°C
Analog	-999 to 999		
Wireless	NA	0-100%RH	0 to 60°C
Accuracy▲			
Integral	± 2% of FS (Unidirectional)	±2.5% (0 to 90% RH) ±3.5% (90 to 100% RH)	±0.4°C
Analog	0.1% of full span + 1 count		
Repeatability	✗	0.25%	0.24°C
Hysteresis	✗	0.8%	✗
Resolution			
Integral	0.1/1 (user selectable)	1%	0.1 °C
Analog	1 count	1 count	± 0.1 °C
Response Time			
Integral	2 Sec.	12 Sec typically	
Analog	<1 sec.		

Analog Input type Features

ADC Resolution	16 Bit
NMRR	>40dB
CMRR	>120dB
Temp. Co	<100 ppm/°C
Input Impedance	>1 MΩ for Voltage i/p; 250Ω for mA i/p
Max. Voltage	20V DC

Display & Keys

	LED Display	LCD Display
Process Value	3-line (RH+T+DP), 0.56" 4-digit 7 segment red LED	3.5" TFT LCD, 262k color graphical with white backlight, 320 x 480 pixels, Visual area: 49.96 x 74.44 mm
RTC	0.56" 4-digit 7 segment red LED (Optional)	3.5" TFT LCD
Status Indication	9 Red LED's for alarm, batch and communication	Unit symbol display through soft input
Keys	Menu, Increment, Decrement, Acknowledgement	Capacitive touch panel

Output

RTC	Real time clock with battery backup
Buzzer	In built buzzer provided to beep during set values violated condition
Loop Power Supply	24VDC (±10%) @75mA with In built short circuit protection (For Analog I/P)

Communication

Interface	RS-485 (2 Wire)
Protocol	Modbus-RTU, DNP 3.0 (Optional)
Baud Rate	9600, 19200, 38400 bps
Data Backfilling	Yes (with DNP 3.0 protocol only)

Wireless (Optional)*

Frequency Band	ISM 2.4 GHz
Protocol	ZigBee (IEEE 802.15.4 standard)
Transmit Power	63mW (+18 dBm)
Receiver Sensitivity	-101 dBm
Connectivity	With HT16Ew (Data received from RH + T)
Antenna	Internal

Data Logging

Memory	64 Mbits
Record Type	Date/ Time/ Temperature/ Humidity/ Pressure/ Alarm status
Total Records	Up to 400000
Record Transmit Interval	User selectable from every 1 Min to 9999 Min

Power Supply

Voltage	18-36V DC
Power Consumption	<5VA
Data Backup	Non-volatile memory (Can be written up to 100000 times)

Isolation (Withstanding voltage)

- Between primary terminals* and secondary terminals**: At least 1500V AC for 1 minute
- Between secondary terminals**: At least 500V AC for 1 minute
- Insulation resistance: 20MΩ or more at 500V DC between power terminals and grounding terminal
- * Primary terminals indicate power terminals.
- **Secondary terminals indicate I/O signal & communication O/P.

Physical

	CDU	CDU-XP
Enclosure Dimension (in mm)	150 x 150 x 50 (H x W x D) for LED 163 x 174 x 50 (H x W x D) for LCD Tolerance: ±2mm	212.20(H)x 212.20(W)x 55(D) Tolerance: ±2 mm
Stainless Steel Front Plate	165 x 165 (H x W) mm (LED) 195 x 195 (H x W) mm (LCD)	250(H) x 260(W)
Weight Approx.	<1 kg	<4 kg
Enclosure Material	Enclosure M.S. powder Coated Body with Stainless Steel Front Flush	Die cast aluminium alloy LM6
Enclosure Protection	IP20	IP55
Terminal Cable Size	1.5mm²	1.5mm²
Cut Out in mm	150(H) x 150(W) for LED 163(H) x 174(W) for LCD	225(H) x 225(W)

Environmental

Ambient Temperature	0 to 55°C
Storage Temperature	0 to 80°C
Humidity	20% to 95% RH (Non-Condensing)
Instrument Warm-up Time	Approx. 15 minutes

Ordering Code

Model	No of Parameter		No of Integral Sensor		Input Type				RTC display		Power supply		Communication Protocol		Display Type	
						DP▲	RH	T								
CDU	X		X		XXX				X		X		X		X	
CDU-XP**	1	1 Parameter	0	None	I00	Integral sensor	None	None	Y	Yes	U2	18-36V DC	M	Modbus	LED	7 Seg LED
	2	2 Parameter	1	One	0II	None	Integral sensor	Integral sensor	N	No			D	DNP 3.0	LCD	TFT LCD
	3	3 Parameter	2	Two	III	Integral sensor	Integral sensor	Integral sensor								
			3	Three	AAA	Analog I/P	Analog I/P	Analog I/P								
					ICC	Integral sensor	Remote sensor with cable	Remote sensor with cable								
					0CC	None	Remote sensor with cable#	Remote sensor with cable#								
					IWW	Integral sensor	Wireless I/P*	Wireless I/P*								
					0WW	None	Wireless I/P*	Wireless I/P*								

*Available in LED version only. Works only with Masibus wireless transmitter HT16Ew

#Remote Sensor shall be supplied with 10 meters cable

▲Please provide the measurement range for Integral DP type while ordering

△Clean Air Environment

**Available in LED version only.

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All specifications are subject to change without notice due to continuous improvements.
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