



## 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 RS485 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)

### 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				Output		
Input Sensor Type						
Input type	Differential Pressure (DP)	Humidity (RH)	Temperature (T)	RTC	Real time clock with battery backup	
Integral	✓	✓	✓	Buzzer	In built buzzer provided to beep during set values violated condition	
Analog (4-20mA/0-10VDC)	✓	✓	✓	<b>Loop Power Supply</b>	24VDC (±10%) @75mA with In built Short Circuit Protection (For Analog i/p)	
Remote sensor with cable	✗	✓	✓	Communication		
Wireless	✗	✓	✓	Interface	RS485 (2 wire)	
Measurement Range				Protocol	Modbus-RTU, DNP 3.0 (Optional)	
Integral <sup>▲</sup>	±125 Pa, ±500Pa, ±1000Pa 0-125 Pa, 0-500Pa, 0-1000 Pa	0-100%RH	0 to 60°C	Baud rate	9600, 19200, 38400 bps	
Analog	-999 to 999			Data Backfilling	Yes (with DNP 3.0 Protocol only)	
Wireless	NA	0-100%RH	0 to 60°C	Wireless (optional)*		
Accuracy <sup>▲</sup>				Frequency Band	ISM 2.4 GHz	
Integral	± 2% of FS (unidirectional)	±2.5% (0 to 90% RH) ±3.5% (90 to 100% RH)	±0.4°C	Protocol	ZigBee (IEEE 802.15.4 standard)	
Analog	0.1% of full span + 1 count			Transmit Power	63mW (+18 dBm)	
Repeatability				Receiver Sensitivity	-101 dBm	
	✗	0.25%	0.24°C	Connectivity	With HT16Ew (data received from RH + T)	
Hysteresis				Antenna	Internal	
	✗	0.8%	✗	Data Logging		
Resolution				Memory	64 Mbits	
Integral	0.1/1 (user selectable)	1%	0.1 °C	Record Type	Date/ Time/ Temperature/ Humidity/ Pressure/ Alarm Status	
Analog	1 count	1 count	± 0.1 °C	Total Records	Up to 400000	
Response Time				Record Transmit Interval	User Selectable from every 1 Min to 9999 Min	
Integral	2 Sec	12 Sec typically		Power Supply		
Analog	<1 sec			Voltage	18-36V DC	
Analog Input type Features				Power Consumption	<5VA	
ADC Resolution	16 Bit			Data Backup	Non-volatile memory (can be written up to 100000 times)	
NMRR	>40dB			Isolation (Withstanding voltage)		
CMRR	>120dB			<ul style="list-style-type: none"> <li>• Between primary terminals* and secondary terminals**: At least 1500V AC for 1 minute</li> <li>• Between secondary terminals**: At least 500V AC for 1 minute</li> <li>• Insulation resistance: 20MΩ or more at 500V DC between power terminals and grounding terminal</li> <li>• * Primary terminals indicate power terminals.</li> <li>• **Secondary terminals indicate I/O signal &amp; Communication O/P.</li> </ul>		
Temp Co	<100 ppm/°C			Physical		
Input Impedance	>1 MΩ for Voltage i/p; 250Ω for mA i/p			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	
Max Voltage	20V DC			Stainless Steel Front Plate	165 x 165 (H x W) mm (LED) 195 x 195 (H x W) mm (LCD)	
Display & Keys				Weight Approx	<1 kg	
	LED Display		LCD Display		Enclosure material	Enclosure M.S. powder Coated Body with Stainless Steel Front Flush
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		Enclosure Protection	IP20
RTC	0.56" 4-digit 7 segment Red LED (Optional)		3.5" TFT LCD		Terminal Cable Size	1.5mm <sup>2</sup>
Status Indication	9 Red LED's for Alarm, Batch and Communication		Unit symbol display through soft input		Environmental	
Keys	Menu, Increment, Decrement, Acknowledgement		Capacitive touch panel		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 <sup>▲</sup>	RH	T										
CDU	X	X	X	XXX	Integral sensor	None	None	X	X	X	X	X	X			
	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	OII	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	*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							
3					Three	AAA	Analog i/p	Analog i/p							Analog i/p	
						ICC	Integral sensor	Remote Sensor with Cable							Remote Sensor with Cable	
						OCC	None	Remote Sensor with Cable <sup>#</sup>							Remote Sensor with Cable <sup>#</sup>	
				IWW	Integral sensor	Wireless i/p*	Wireless i/p*	Wireless i/p*								
				OWW	None	Wireless i/p*	Wireless i/p*	Wireless i/p*								