masibus
A Sonepar Company

85XX+

24-Channel Scanner/ DAQ Module

Monitor. Protect. Control.
Annunciation. Communication. Logging.

mSCAN+ CE Modbus PROFI BUS

The 85XX+ is an upgrade on the most successful model 85XX; additional capabilities have been added by way of multi-serial ports, Ethernet port, Profibus-DP, USB port, scanning speed and alphanumeric display.

Modular and Expandable

85XX+ is modular in architecture and Expandable, 5 I/O slots can accommodate a mix of Analog Input, Digital Input, Open collector output, Analog output or Relay output to suit different applications in Power, water, Pipeline and Infrastructure industries. All field inputs are wired by Pre-Fab cables direct into panel terminals.

Configuration

85XX+ is configured using the mSCAN+ software which is very user friendly; the unit can also be edited by front keyboard and display. The unit has numeric and alpha-numeric displays for value and tag display, Alarm/Trip and control status are displayed by discrete LEDs on front fascia.

Communication

85XX+ comes with one RS485 Port as a standard, a second RS485 Port, Ethernet Port & Profibus DP Port are options to enhance the communication capabilities of the unit and use it as an RTU, Alarm controller or protection device for motors, transformers, etc. It has optional USB port for logged data retrieval.

Alarm/Control

8 Relay and 24 OC outputs can be freely mapped as alarm/trip or control set point

Analog Output

An isolated 4-20mA Re-transmission output option is available for onward transmission to PLC/DCS/Recorder/SCADA. Max 8 output per card is possible.

Features

- Compact and Rugged
- Alpha-Numeric display for programmable tag no / Engg unit
- EMI/EMC Type test qualified & CE Marked
- 8 Channel Universal Analog Input Module
- 16 Channel Digital Input Module (Optional)
- 4/ 8 Relay Output Module (Optional)
- 24 Open Collector Output Module (Optional)
- Analog Output (Optional)
- Fast sampling and generation of Alarm/Trip
- User free mapping of Relay to Channels
- Comprehensive alarm/trip logic
- RS485 Serial port (one standard and 2nd Optional)
- 1X Ethernet port (Optional)
- 1X USB port (Optional for logged data retrieval)
- 1X Profibus-DP port (Optional)
- Modbus RTU over serial and Modnet over Ethernet Protocols
- Windows based free mSCAN+ configuration software
- Datalogging option
- Extruded Aluminum Chassis with IP55 front fascia

Applications

- Substation Monitoring
- Motor/Generator Monitoring and Protection
- Transformer monitoring and protection
- Compressor/Pump/DG set monitoring
- Asset Monitoring
- As a Serial/Ethernet RTU
- Remote I/O module
- Multi Point On/Off control

USER-FRIENDLY PROGRAMMING AND MONITORING

mSCAN+ Software

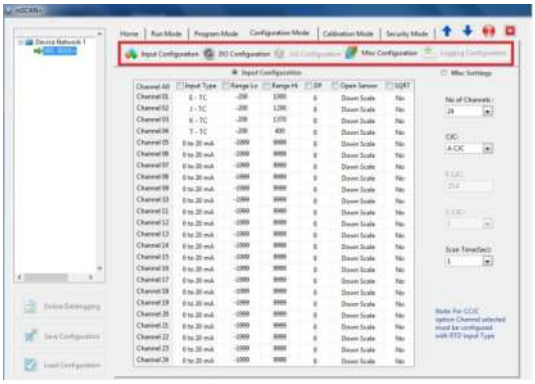
mSCAN+ Software is used to Monitor and Configure the Multichannel Scanner

- Auto device discovery of 85XX* over RS485 Port
- Run Time Data monitoring
- Configuration through RS485 and Ethernet Port
- Data Log Retrieval (Periodic and Event) in .xlsx and .pdf file formats
- Online Data logging in .xlsx format
- Report Generation
- Alarm/Trip Setpoints
- Time Stamping

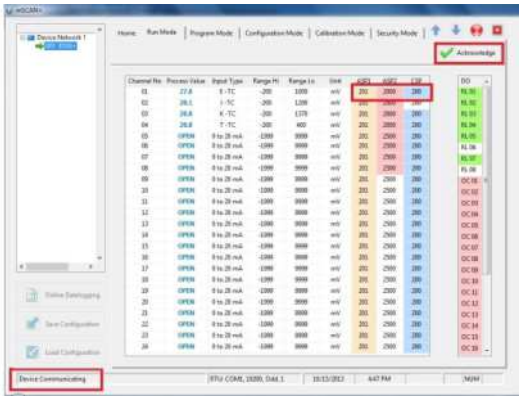
Easy to Monitor

Parameters	Front Display	mSCAN+ Software
Real-time data	√	√
• Channel No.	√	√
• Process Value	√	√
• Zero/Span, Input Type	√	√
• Alarm Status	√	√
• Channel wise Process value	√	√

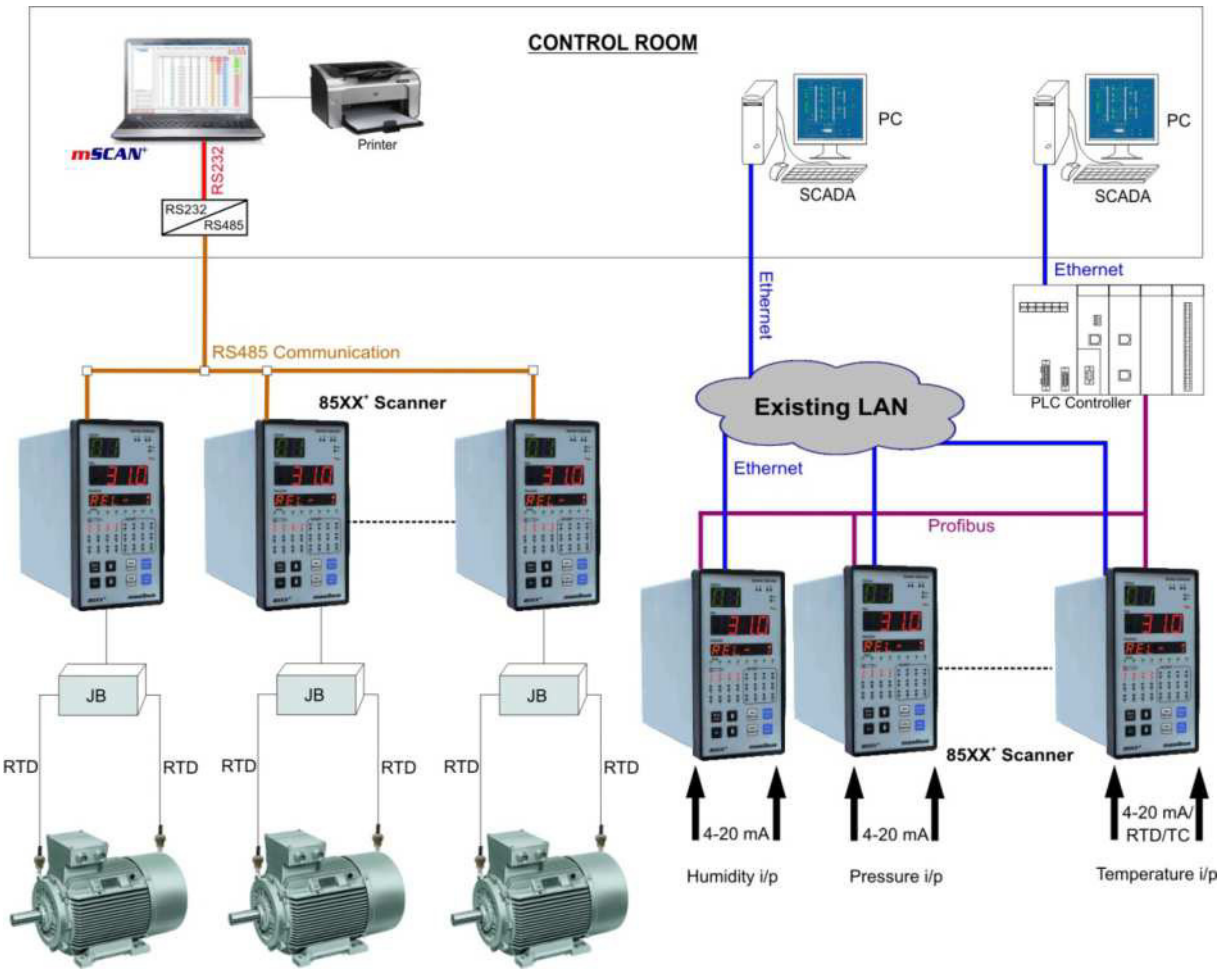
Programming using mSCAN+ software



Monitoring using mSCAN+ software



APPLICATION



TECHNICAL SPECIFICATION

Input

Analog Input

No of AI Modules	1 (8 ch), 2 (16 ch) or 3 (24 ch)
Input Type	Thermocouple, RTD, Voltage, Current
Input Range	Refer Table -1
Accuracy	0.1% FS
ADC Resolution	17 bits
Display Resolution	0.1 / 1.0 °C
Sampling Rate	T/C & Voltage/Current: 50mSec/Channels RTD: 100mSec/Channels
Display Scan Rate	1 to 99 Sec (Programmable)
CJC	Auto/ Manual/ External for T/C type
Sensor open	All inputs except 0-5V, 0-10V DC
Sensor Burnout current	0.4uA
RTD excitation current	250uA (Approx)
NMRR	> 40dB
CMRR	> 120dB
Temp-co	< 100ppm/°C
Input Impedance	> 1MΩ
Max Voltage	20V DC
Connector Type	24 pin Rectangular connector

Digital Input▲

No of DI modules	1 (16 ch)
Response time	50mSec
Rated Input Voltage	24 V DC
Input On Voltage	≥15 V DC
Input Off Voltage	≤5 V DC
Input Current (At Rated Input Voltage)	Approx 3mA/ Channel
Maximum Allowable Input Voltage	30 V DC

Display and Keys

Channel number	2-Digit, 0.56", Green seven segment LED
Process Value	4-Digit, 0.56", Red seven segment LED
Engineering Unit	6-Digit, 0.3", Orange Alphanumeric LED
Status LEDs	Manual, Run, Flt, Tx/Rx, Relay status Alarm/Control Status per channel
Keys	2 X 4 for Configuration, Operation and Calibration

Output

Alarm/Trip/Control Output (Optional)

Relays	RL: 8 Nos per card RL4: 4 Nos per card RL8: 8 Nos per card
RL Module	RL (Form A): C- NO or C-NC (Jumper Selectable)
RL4 / RL8 Module	RL4 (Form C): C-NO-NC RL8 (Form C): C-NO-NC
Rating	2A @ 250V AC / 30V DC
Connector Type	25 D-Sub

Open Collector (OC) Output (Optional)

OC Outputs	24
Type	Sink
Rating	100mA@30V DC
OC1 Module	Common pin: Ground only (O/P Logic Isolated)
OC2 Module	Common pin: +5V@1A/Ground, jumper selectable for Internal/External Relay drive (O/P Logic non-Isolated) *Default jumper set for Ground
Connector Type	25 D-Sub

Analog Output▲ (Optional)

Number of outputs	Max upto 8 nos per card
Output signal	0/4 to 20 mA (Isolated)
Load Resistance	500Ω max
Output accuracy	± 0.25 % of span
Resolution	16 bits

Communication Output

RS485-1 (Standard) & RS485-2 (Optional)

Protocol	Modbus-RTU Slave
Baud Rate	9600 or 19200 or 57600 bps
Connector	2 pin, plug-in terminals

Ethernet (Optional)

Protocol	Modbus - TCP/IP(Modnet) Slave
Baud Rate	10 Mbps
Connector	RJ45

Profibus-DP▲ (Optional)

Protocol	Profibus DP V0 Slave
Maximum No. of Read Bytes	244 (Cyclic Data - as per the GSD)
Maximum No. of Write Bytes	244 (Cyclic Data - as per the GSD)
Baud Rate	1200 to 12 Mbps Auto Detecting
Connector	9-Pin D-type Female

USB Port (Optional-only for logged data retrieval through pendrive)

No of port	1 no max
Standard	2.0
Data format	Excel
Max. USB pen drive size	Upto 16 GB supported

Data Logging

Memory Size	25MB (Periodic), 7MB (Event)
Data retrieval	via mSCAN® Software
Min Periodic Log Time	1 min
No of Records	$101888 \times \left[\frac{256}{(2 \times \text{No. of Ch}) + 12}\right]$

Power supply

Voltage	85-265 V AC, 50/60 Hz/ 100-295 V DC 18 - 36V DC (Optional)
Power Consumption	9W

Isolation (Withstanding voltage)

- Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
- Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
- Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute
- Between secondary terminals**: At least 500 V AC for 1 minute

* Primary terminals indicate power terminals and relay output terminals.
** Secondary terminals indicate I/O signal and Communication O/P.

Insulation resistance: 20MΩ or more at 500 V DC between power terminals and grounding terminal

Physical

Size (in mm)	144 (H) X 72 (W) X 165 (D)
Panel Cutout (in mm)	137 (H) X 68.5 (W)
Depth behind Panel (in mm)	155 / 203 (with cable connector)
Mounting	Panel Mount (Standard)
Weight	1.25 Kg
Enclosure Material	Extruded Aluminum
Protection	IP20 (Overall, except terminals), IP55 (Front Fascia)

Environmental

Operating temperature	-10 to 55 °C
Storage temperature	0 to 80 °C
Humidity	20 to 95 % RH non-condensing

Table 1: Display Range

Input Type		Ranges
Thermocouple	E	-200 °C to 1000 °C
	J	-200 °C to 1200 °C
	K	-200 °C to 1372 °C
	T	-200 °C to 400 °C
	B	450 °C to 1820 °C
	R	0 °C to 1768 °C
	S	0 °C to 1768 °C
	N	-200 °C to 1300 °C
RTD	Pt100	-199.9 °C to 850.0 °C
	Cu53	-210.0 °C to 210.0 °C
	NI-120	-70.0 °C to 210.0 °C
Voltage/Current	0/4 -20mA (Ext. 250Ω) 0/1-5V -10 to 20 mV DC 0 - 100 mV DC 0 - 10 V DC	-1999 to 9999

Compliance

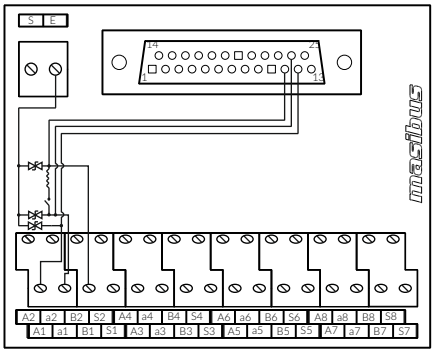
EN 61010-1:2010 (Safety)
EN 61000-6-2:2005 (EMI/EMC)
EN 61000-6-4:2007 (EMI/EMC)

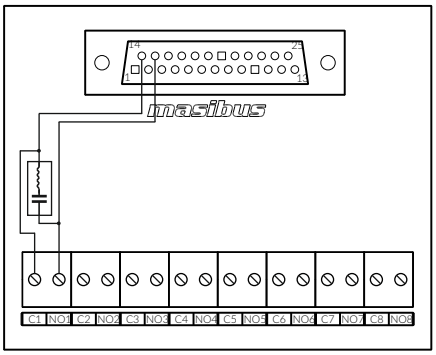
▲Options are not available in CE compliance Scanner

TECHNICAL SPECIFICATION

Terminal Board for AI Module (Optional)	
Input Connection	MKKDS type connector screw up to 2.5mm^2 conductor
O/P Connection	25 Pin D-type plug in type Connector
Size (L X W X H) in mm	90 X 90 X 75
Mounting	35 mm DIN Rail

Terminal Board for Relay Module (Optional)	
Input Connection	25 Pin D-type plug in type Connector
O/P Connection	MKDS type connector screw up to 2.5mm^2 conductor
Size (L X W X H) in mm	90 X 90 X 75
Mounting	35 mm DIN Rail





Ordering Code (85XX+)

Model	No of I/O Slots and type										Power Supply		Communication		USB port#		Datalogging	
	1		2		3		4		5									
85XX+	XX		XX		XX		XX		XX		XX		XX		X		X	
	AI	Analog i/p	N	None	N	None	N	None	N	None	U1	85-265 VAC	1X	1 x RS485	N	No	N	No
			AI	Analog i/p	AI	Analog i/p	RL	8 Relay	RL4	4 Relay	U2	18-36 VDC	2X	2 x RS485	Y	Yes	Y	Yes
									RL8	8 Relay			1E	1 x RS485 + 1 x RJ45				
									OC2	Open Collector o/p			2E	2 x RS485 + 1 x RJ45				
									1A	1 no 4-20mA o/p			1P	1 x RS485 + 1 x Profibus-DP				
									2A	2 nos 4-20mA o/p								
									4A	4 nos 4-20mA o/p								
									6A	6 nos 4-20mA o/p								
									8A	8 nos 4-20mA o/p								
									DI	Digital i/p								

Ordering Code (85XX+ with CE compliance)

Model	CE Compliance	No of I/O Slots and type										Power Supply		Communication		Datalogging	
		1		2		3		4		5							
85XX+	CE	XX		XX		XX		XX		XX		XX		XX		XX	
		AI	Analog i/p	N	None	N	None	N	None	N	None	U1	85-265 VAC	1X	1 x RS485	N	No
				AI	Analog i/p	AI	Analog i/p	RL	8 Relay	OC1	Open Collector o/p	U2	18-36 VDC	2X	2 x RS485	Y	Yes
														1E	1 x RS485 + 1 x RJ45		
														2E	2 x RS485 + 1 x RJ45		

Note:
Specify X from ordering code.
If USB port is selected, Datalogging option must be selected. USB port will work with Masibus supplied pen drive only.
For Analog o/p type; other than 0/4-20mA please contact factory
Customer to specify required input type/range from Table-1 at the time of Order placement; else by default all channels will be calibrated for Input RTD Pt100 range

Prefab Cables Ordering Code

Part Code	Description
AIC-2.5	8 points Analog Input cable, 25 Core 2.5 mtrs long (8 Ch: 1 Cable, 16 Ch: 2 Cables, 24 Ch: 3 Cables Required)
RLC-2.5	8 Relay output cable, 25 Core 2.5 mtrs long
OCC-2.5	24 OC output cable, 25 Core 2.5 mtrs long
DI-2.5	16 DI output cable, 25 Core 2.5 mtrs long

Terminal Board Ordering Code (Extra Cost)

Part Code	Description
m-85XX+-FIB-AI	8 channel Field Interface Board for Analog Input (For 8 Ch: 1 Module, 16 Ch: 2 Modules, 24 Ch: 3 Modules Required)
m-85XX+-FIB-RL	8 channel Field Interface Board for Relay output

Prefab Cables for Field Interface Board Ordering Code (Extra Cost)

Part Code	Description
m-AIC-2.5-R24J-D25M	8 points Analog Input cable, 25 Core 2.5 mtrs long with DB25 connector (8 Ch: 1 Cable, 16 Ch: 2 Cables, 24 Ch: 3 Cables Required)
m-RLC-2.5-D25F-D25M	8 Relay output cable, 25 Core 2.5 mtrs long with DB25 connector at both ends
m-RLC-2.5-D25F	8 Relay output cable, 25 Core 2.5 mtrs long with one end DB25 connector and other end pig tails

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-77, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

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MC-2


DDU-24


DDU-26


DDU-44


DDU-46

NTP, PoE and Wireless Clock System

MC-2

Wireless Master Clock

DDU-24/26

DDU-44/46

NTP, PoE and Wireless Slave Clock

Masibus Wireless Clock System MC-2 Master Clock and DDU-24/26, DDU-44/46 Slave Clock is a perfect solution for a wide range of applications where accurate, synchronized time is required over wireless. It displays parameters like Time and Date.

Wireless Clock System eliminates wiring and reduces installation cost and also allows a retrofitting of an existing installation in a convenient way. Each clock can work as Slave cum repeater that helps to extend the network range. The Wireless system allows multiple Slave clocks to work on same/multiple frequency range and can retransmit without interfering with other wireless products.

Frequency hopping technology is available for error free communication in case of interference from some wireless device on some particular communication frequency.

Masibus Wireless Clock System also has more options of wired RS232 or RS485 Connection and NTP other than RF wireless connection to sync with GPS Master Clock.

MC-2 and DDU-24/26, DDU-44/46 works on Time protocols like (NGTS, NMEA and T-Formats) for wired Connection.

DDU-24/26, DDU-44/46 also available with NTP [Network Time Protocol] with PoE [Power Over Ethernet] option.

The DDU-24/26, DDU-44/46 has built-in Battery backed RTC which maintains time in case of loss of power and communication break.

DDU-24/26, DDU-44/46 Slave Clock is specially designed with SS faceplates, Modular wall mounting compatible for Pharma & Clean room requirement. The rugged Mild Steel case with Front Soft Steel makes DDU-24/26, DDU-44/46 ideal for demanding industrial environments and elegant look. Flush LED display of DDU-24/26, DDU-44/46 offers a wide angle viewing. Time and Date Display are available in Flush Mount, Panel Mount & Wall mount versions.

DDU-24/26-XP is for use in Zone 1 and 2 of Gas group IIA and IIB Hazardous areas. The enclosure is also IP-65 certified.

MC-2 Master Clock is designed in ABS Enclosure with Wall Mount or Table Top provision.

Features

MC-2

- Receives automatic time from network of GPS satellites
- Transmits the time to clocks through RF or Serial
- Synchronization of Server time system through RS232/ RS485
- 6 digit 0.56" (14mm) LED Display
- Status LED indications
- Compact ABS plastic Enclosure along with Antenna
- Table-top or Wall-mount option

DDU-24/ 26 or DDU-44/ 46

- 4 digit, 2.3" (57mm), Large LED Display for DDU-24
  4" (100 mm), Large LED Display for DDU-44
  6 digit, 2.3" (57 mm), Large LED Display for DDU-26
  4" (100 mm), Large LED Display for DDU-46
- Best suited for clean room applications
- Each clock can act as Repeater to extent network range
- Works in stand-alone mode if network fails
- Wall Mount, Panel Mount or Flush mount option
- DDU-24 / DDU-26 is also available in Ex-proof Enclosure for gas group IIA and IIB (IP65)
- Optional NTP [LAN Interface] with IEEE 802.3af compliant PoE

MC-2 and DDU-24/ 26, DDU-44/ 46

- Option to communicate on RF(866 MHz Freq.) or Serial
- Use of unlimited slave clocks within transmitter's range
- Multiple serial time frame Inputs
  - NMEA-0183[RMC] / NGTS/ T-Format
- Retains time during loss of power/time code
- Manual Time Setting(In case of GPS Failure)
- International Time Zone option
- 12 Hour and 24 Hour Time Format
- Time and Date Display (Front keypad selectable)
- Communication loss indication
- Universal Power Supply

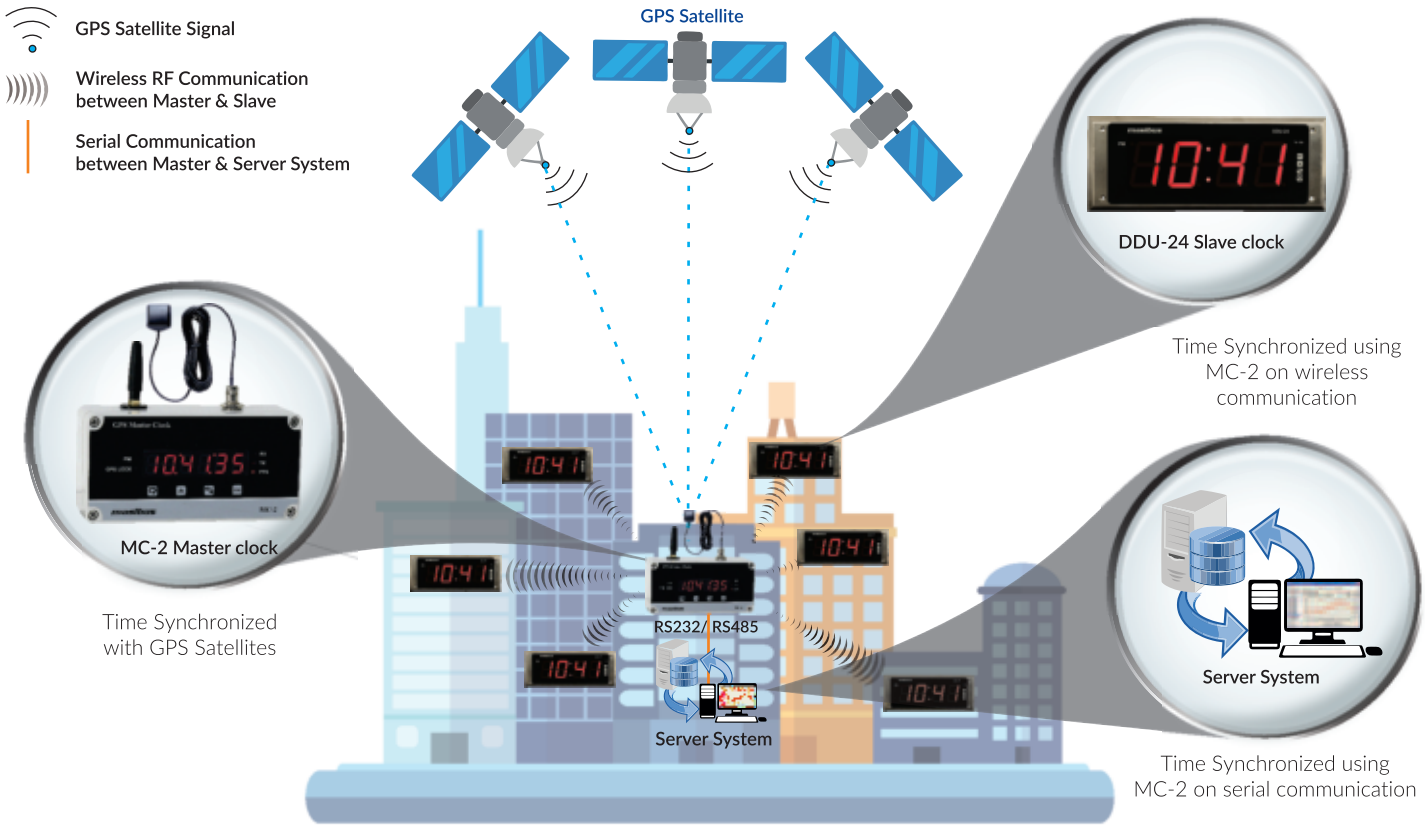
Application

- Synchronization with GPS System in
  - Pharmaceutical Industry and Process Industry
  - Factory/Offices/Warehouse/Canteen/Clean room
  - School/College/Healthcare units[hospital, Laboratory]

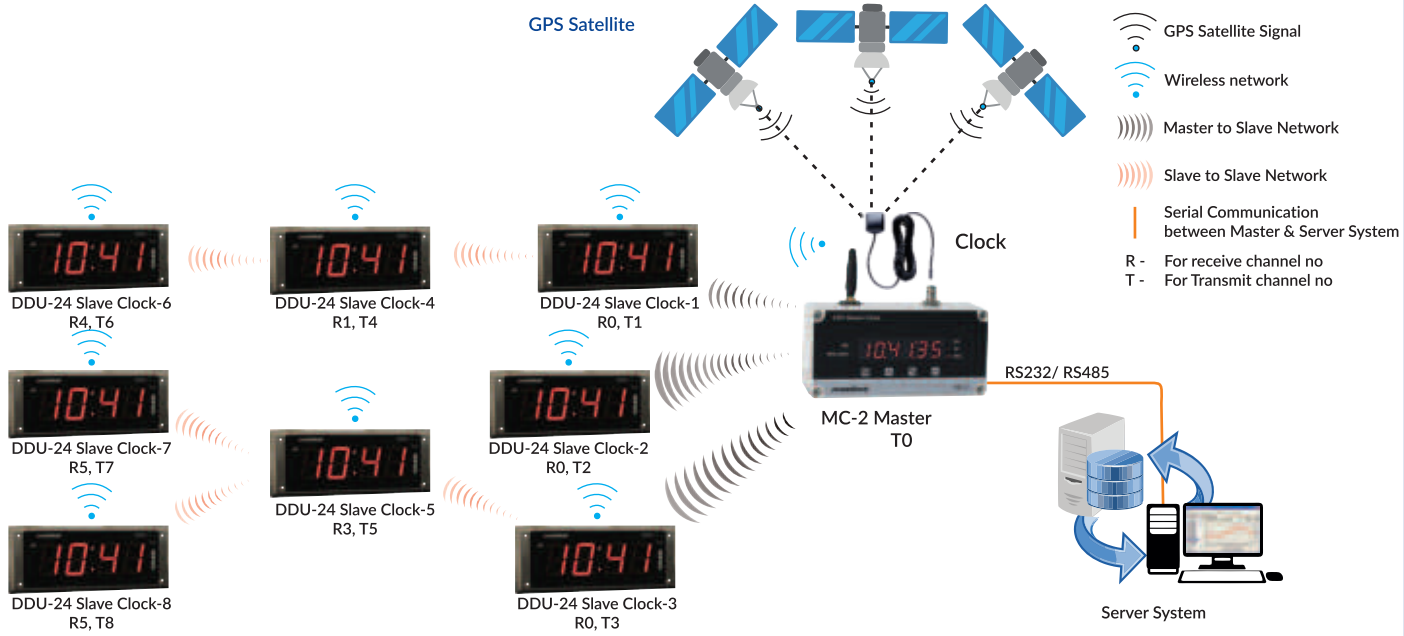
www.masibus.com
sales@masibus.com

APPLICATION DIAGRAM:

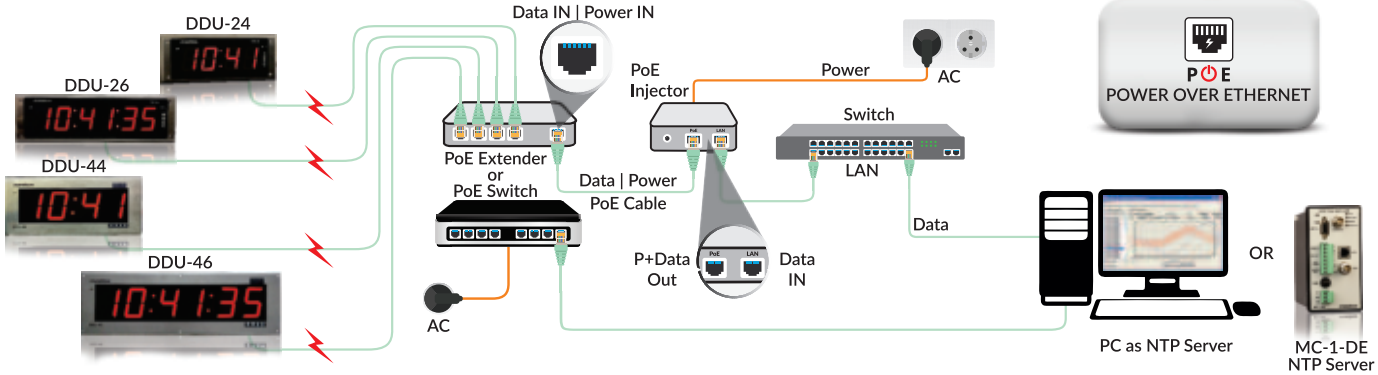
Wireless Master Slave Communication



Wireless Master Slave with Slave Retransmission



DDU 24/26 or DDU 44/46 Wireless & NTP PoE Synchronized Slave Clocks



APPLICATION DIAGRAM:

Specifications	MC-2 (Master Clock)	DDU-24/44 (Slave Clock)	DDU-26/46 (Slave Clock)
Display			
No of Digit	Six	Four	Six
Digit Height	0.56"(14mm)	2.3"(57mm) for DDU-24/26 4"(100mm) for DDU-44/46	
Type of Display		LED	
Display Color		RED	
Display Format	Time: HH:MM:SS Date: DD.MM.YY/ MM.DD.YY/ YY.MM.DD	Time: HH:MM Date: DD.MM / MM.DD	Time: HH:MM:SS Date: DD.MM.YY/ MM.DD.YY/ YY.MM.DD
12/24 Hour Mode		✓	
AM/PM Indication		✓	
International Time Zone		✓	
User Interface			
Push Button Switch (For Configuration)		✓	
Password Protected		✓	
RF Wireless Communication			
Wireless frequency		866 MHz	
Antenna	3 dbi Rubber-duct External Antenna	Integrated antenna	
Receiver Sensitivity	-120 dBm	-120 dBm	
Transmitter Power	+30 dBm	+20 dBm	
Distance Range (Approx.)	600m Line of site;100meters with obstacles, 50 meters with obstacles for slave to slave(depends on site conditions)		
Serial Communication (RS232 / RS485)			
Protocols		NMEA-0183[RMC] / NGTS/ T–Format	
Baud Rate	4800/9600/19200/38400	9600/19200	
Terminal		4 pin, Plug-in type Connector; Wire: 2.5mm^2	
Power Supply			
Power		AC: 85-265V, 50/60 Hz, 1Ph & DC: 100-300 V	
Power Consumption	<2W	5W	
Terminal		3 pin, Plug-in type Connector	
Cable/Conductor Size		2.5mm^2	
Environmental			
Operating Temperature		0 °C to +55 °C	
Storage Temperature		-20 °C to +80 °C	
Humidity		20-95%RH(Non-Condensing)	
Physical			
Enclosure Protection		IP20	
Size [H x W x D] [in mm]	80 x 160 x 55	118 x 298 x 54 for DDU-24 175 x 460 x 70 for DDU-44(MS Enclosure) 215 x 500 x 79 for DDU-44(SS Front)	118 x 404 x 54 for DDU-26 175 x 665 x 70 for DDU-46(MS Enclosure) 215 x 705 x 79 for DDU-46(SS Front)
Weight (approx.)	0.4Kg	1.5Kg for DDU-24 2.8 Kg for DDU-44(MS Enclosure) 3.0 Kg for DDU-44(SS Front)	1.9 Kg for DDU-26 4.0 Kg for DDU-46(MS Enclosure) 4.1 Kg for DDU-46(SS Front)
Material	ABS	Front plate (SS) and Enclosure Mild Steel for DDU-24/26, DDU-44/46 Mild Steel for DDU-44/46	
Mounting	Wall Mount/ Table Top	Wall Mount/ Panel/ Flush Mount	

GPS Receiver for MC-2	
Timing Accuracy	< 15 ns with GPS Receiver (Receiver is locked on fixed position)
Positioning Accuracy	< 10m
Input Frequency	1575.42 MHz L1 C/A code
Tracking	12 parallel channels
Acquisition Time	Hot Start < 5 sec Warm Start < 38 sec Cold Start < 45 sec

Optional NTP [LAN Interface] for Slave Clocks	
Time Sync Protocol	NTP V3, UDP, Telnet
Internet Protocol	IP V4
Mode	Client
Protocol Time Format	UTC
Physical Interface	RJ45, 10/ 100 Mbps

GPS Antenna for MC-2	
Type	Active L1, GPS, 28 dB gain
Antenna Cable	RG174 (5 meters supplied with unit)#
Operating Temperature	-40 to +85 °C
Coverage	360°C Omni-directional
Ingress Protection	IP67
Weight (approx.)	60 g

PoE [Power Over Ethernet] for NTP Slave Clocks	
Standard	IEEE 802.3af
Input Supply Voltage	48VDC[36VDCmin - 57VDCmax]
Power Consumption	<6W
Terminal	100BaseT, RJ45
Cable	CAT 5

Isolation (Withstanding voltage)
Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute

* Primary terminals indicate power terminals
** Secondary terminals indicate RS232/485.
Insulation resistance: 20MΩ or more @ 500 V DC between power terminals and grounding terminal
For any different type of antenna cable and length contact HO

DDU-24-XP / DDU-26-XP

Physical	
Size [H x W x D] [in mm]	180 x 350 x 85 for DDU-24 180 x 455 x 85 for DDU-26
Enclosure	Flameproof (Explosion proof) Ex-d
Area Classification	Zone 1&2
Gas Group	IIA,IIB
Enclosure Protection	IP65
Weight (approx.)	5.4Kg for DDU-24/ 6.7Kg for DDU-26

Mounting	
Mounting	Wall mounting with the help of 4 NOS bolts of size M8
Cable Entry Size/no	3/4" ET-2 Nos
Plug Details	1 Blind Plug & 1 DC Cable gland 3/4"ET

Ordering Code for MC-2

Model		Mounting		Output Type 1		Output Type 2	
MC-2	X		X		X		
	W	Wall	N	None	N	None	
	T	Table Top	1	Wireless(RF)	1	RS 232	
					2	RS 485	

Note: For FLP Enclosure in MC-2 contact factory.

Ordering Code for DDU

Model	Display size		No of Digits		Mounting		Input Type 1		Input Type 2	
DDU	X		X		X		X		X	
	2	2.3"	4	4 digits	W	Wall (IP 20)	N	None	N	None
	4	4"	6	6 digits	F*	Flush Mount	1	Wireless(RF)	1	RS 232
					R**	Rack/Panel Mount (IP20)	2	NTP	2	RS 485
					XP#	Flame Proof (IP65)	3	NTP + PoE		

Note: *Flush Mounting will have only front SS Plate, other part of Enclosure will be MS Material.
DDU-44/46 is available with SS (SS-304) Front Plate without Conceal Box with wall mount key holes.
**Panel Mount Enclouser available in DDU-44/46 only
#Flameproof Enclosure is only available in DDU-24 / DDU-26 model, for other FLP Enclosure please contact factory
For DDU-24/26, DDU-44/46 with Full SS Enclosure and DDU-24-XP/ DDU-26-XP with SS Box please contact factory.
NTP + PoE option will not have 85- 265 VAC Supply

DDU-24-XP
Time Display Unit
Display Height: 57mm
Display Color: Red
Mounting: Wall/ Flush/ FLP
Protection: IP20/ IP65(XP)
Communication: Serial/Wireless/ NTP

DDU-26-XP
Time Display Unit
Display Height: 57mm
Display Color: Red
Mounting: Wall/ Flush/ FLP
Protection: IP20/ IP65(XP)
Communication: Serial/Wireless/ NTP

DDU-46
Time Display Unit
Display Height: 100mm
Display Color: Red
Mounting: Wall/ Panel/ Flush
Protection: IP20
Communication: Serial/ Wireless/ NTP

DDU-TM
Time Display Unit
Display Height: 100mm
Display Color: Blue/ Red/ Green/ Amber
Mounting: Wall/ Rack/ Hanging/ Panel
Protection: IP20/ IP65
Communication: Serial/ NTP

MC-2
Master Clock
Display Height: 14 mm
Display Color: Red
Mounting: Wall/ Table top
Protection: IP20
Communication: Serial/ Wireless

DDU-44
Time Display Unit
Display Height: 100mm
Display Color: Red
Mounting: Wall/ Panel/ Flush
Protection: IP20
Communication: Serial/ Wireless/ NTP

DDU-CL
Calendar Display Unit
Display Height: 100 mm
Display Color: Red/ Amber
Mounting: Wall/ Rack/ Hanging/ Panel
Protection: IP20
Communication: Serial/ NTP

DDU-DY
Day Display Unit
Display Height: 100mm
Display Color: Blue/ Red/ Green/ Amber
Mounting: Wall/ Rack/ Hanging/ Panel
Protection: IP20/ IP65
Communication: Serial/ NTP

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382024, Gujarat, India.
Tel: +91 79 23287275-77, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

Doc. Ref. DDU24/26/44/46-MC-2/R2F/1217

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DDU-XX

Digital Display Unit

DDU-TDC (Time/Date)
DDU-TM (Time)
DDU-DT (Date)
DDU-TD (Time & Date)
DDU-DY (Day)
DDU-HZ (Frequency)
DDU-CL (Calendar)

Masibus Digital Display Unit DDU-XX is a versatile, multi-featured code driven Digital Display. It displays parameters like Time, Date, Day, Calendar and Frequency. The Time, Date and Day display decodes and displays all Time protocols like IRIG-B modulated/ TTL, NTP (Ethernet) and Serial (NGTS, NMEA and T-Formats). Frequency Display decodes frequency from raw input signal or from Ethernet input. IRIG-B decoding supports the 1 KHz modulated format (B12x) and the TTL format (B00x).

The DDU has built-in Battery backed RTC which maintains time in case of loss of power and communication break. Redundant Input option is available for critical installations.

The 100mm large display can be viewed from a distance of around 50m.

The rugged case makes DDU-XX ideal for demanding industrial environments. Flush LED display of DDU-XX offers a wide angle viewing. Time, Date, Day, Calendar & Frequency Displays are available in both Panel & Wall mount versions.

Features

- 4” (100mm) Large Display
- Multiple time frame Inputs.
    - NMEA-0183[RMC] / NGTS/ T-Format
    - NTP Protocol
    - IRIG-B Modulated
    - IRIG-B TTL
- Retains time during loss of power/time code
- Wall/ Rack/ Table-Top Mounting for IP20 Enclosure
- Wall/ Hanging-Type Mounting for IP65 Enclosure
- Universal Power Supply
- Manual Time Setting
- Configurable International Time Zone
- Remote time monitoring
- 4 level Brightness control

Applications

Synchronization with GPS System in Electrical utilities:

- Generation
- Transmission
- Energy and Demand monitoring

- Distribution Interface with SCADA/RTU
- EMS system

TECHNICAL SPECIFICATIONS

Technical Specification Sheet

	Time/Date Configurable Display	Time or Date Display	Time & Date Display	Day Display	Frequency Display	Calendar Display (Date, Time, Day)
Display						
No of Digit	Six	Six / Eight[1] (Date Only)	Time: Six Date: Six	Three	Five	Time: Six Date: Six Day: Three
Digit Height	4" (100 mm)					Time: 4"(100 mm) Date: 2.3"(57 mm) Day: 2"(50 mm)
Type of display	7 segment	7 segment	7 segment	5x7 dot matrix type	7 segment	Time: 7 segment Date: 7 segment Day: 5x7 dot matrix type
Display Colors[2]	Red	Red	Red	Red	Red	Time: Red Date: Red/Green Day: Red/Amber
Display Format	Time: HH:MM:SS Date: DD:MM:YY	Time: HH:MM:SS Date: DD:MM:YY MM.DD.YY/YY.MM.DD	Time: HH:MM:SS Date: DD:MM:YY MM.DD.YY/YY.MM.DD	DDD	XX.XXX	Time: HH:MM:SS Date: DD.MM.YY MM.DD.YY/YY.MM.DD Day: DDD
Lock/Unlock Indicator	✓	✓	✓	✓	NA	✓
12/24 Hour Mode	✓	✓	✓	NA	NA	✓
AM/PM Indication	✓	✓	✓	NA	NA	✓
International Time Zones	✓	✓	✓	✓	NA	✓
User Interface						
Serial Configuration [Hyper Terminal]	✓	✓	✓	✓	NA	✓
Telnet CLIENT [with LAN Interface only]	✓	✓	✓	✓	NA	✓
Password Protected	✓	✓	✓	✓	NA	✓
DIP Switch	NA	NA	NA	NA	✓	NA
Signal Input						
RS232/RS485	✓	✓	✓	✓	✓	✓
IRIG-B TTL [PWM]	✓	✓	✓	✓	NA	✓
IRIG-B Modulated	✓	✓	✓	✓	NA	✓
NTP (LAN Interface)/ Ethernet in case of Frequency Input	✓	✓	✓	✓	✓	✓
Line Frequency Input	NA	NA	NA	NA	✓	NA
Connectors						
RS232 [DB9] RS485 [Standard 3-pin Plug-in type]	✓	✓	✓	✓	✓	✓
Ethernet,100BaseT, RJ45	✓	✓	✓	✓	✓	✓
Power, Standard 3-pin Plug-in type	✓	✓	✓	✓	✓	✓
Mechanical						
IP20 Protection						
Size [HXWXD] (in mm) [Without Mounting Bracket]	175 X 665 X 60	177 x 646 x 68	355 x 646 x 68	177 x 326 x 68	177 x 646 x 68	266 x 646 x 68
Weight (Approx.)	3.8 Kg	4.5 Kg	7.32 Kg	2.5 Kg	4.5 Kg	5.5 Kg
Material	M.S with Powder Coating Inside and Out	Aluminum with Black powder coat paint inside and out				
Front Acrylic	Smoke Grey Acrylic					
Mounting	Rack Mount / Wall Mount / Table Top / Hanging type					
IP65 Protection	NA					NA
Size [HXWXD] (in mm)	NA	200 x 800 x 120	400 x 800 x 120	200 x 400 x 120	200 x 800 x 120	NA
Weight (Approx.)	NA	9 Kg	16 Kg	3.3 Kg	9 Kg	NA
Material	NA	1.2 mm mild steel with powder coat paint				NA
Front Acrylic	NA	Smoke Grey Acrylic				NA
Mounting	NA	Hanging Type / Wall Mount				NA

Technical Specification Sheet

Power Supply	**Non-POE (Standard)**	**POE (NTP) option**
Power	AC: 90-264 V, 47-63 Hz,1Ph & DC: 120-370 V	48V DC [36V DC min - 57V DC] max Standard: IEEE 802.3af
Power Consumption	<10 W	<6W
Terminals	3 pin Plug-in type Connector [Cable size: 2.5 sq.mm]	100BaseT, RJ45
Environmental		
Operating Temperature	0 °C to +55 °C	
Storage Temperature	-20 °C to +80 °C	
Humidity	20 to 90 % RH (Non-condensing)	

Note:-1. For 8 digit Date display contact factory
2. For Display Color other than RED, please specify at the time of Order

TECHNICAL SPECIFICATIONS

Time Signal Input

Input	Description	Physical Interface
Serial RS485	Protocols: NMEA-0183[RMC] / NGTS/ T – Format Baud Rate: 4800/9600/19200/38400/57600/115200 bps	2 pin Plug-in type Connector [Cable size: 2.5 sq mm] 9-pin D type female for IP20 Enclosure, 3 pin Plug-in type Connector [Cable size: 2.5 sq mm] for IP65 Enclosure
Serial RS232		
IRIG-B Modulated	Format: IRIG-B12X Carrier Frequency: 1 KHz Modulation Ratio: 3:1 3.3 Vpp (10K Input Impedance)	BNC Female connector for IP20 Enclosure 2 pin Plug-in type Connector [Cable size: 2.5 sq. mm] for IP65 Enclosure
IRIG-B TTL (PWM)	Format: IRIG-B00X TTL Input Impedance: 2KΩ @ 5V	BNC Female connector for IP20 Enclosure 2 pin Plug-in type Connector [Cable size: 2.5 sq. mm] for IP65 Enclosure
NTP (LAN Interface)	Time sync protocol: NTP V3, UDP, Telnet Internet protocol: IPv4; Mode: Client Protocol Time format: UTC	RJ45, 10/100 Mbps

Frequency Signal Input

Input	Description	Physical Interface
Serial RS485	Based on serial frame [Broadcasted by Server] Baud Rate: 2400/4800/9600/19200 bps	2 pin Plug-in type Connector [Cable size: 2.5 sq. mm] 9-pin D type female for IP20 Enclosure, 3 pin Plug-in type Connector [Cable size: 2.5 sq. mm] for IP65 Enclosure
Serial RS232		
AC Voltage Input	63V, 110V & 240 V AC Input Voltage range is -30% to +25% of Selected input 45-65 Hz, Input Frequency	2-pin Plug-in type Connector [Cable size: 2.5 sq. mm]
Ethernet (LAN Interface)	Based on UDP [Broadcasted by Server]	RJ45, 10/100 Mbps

Isolation (Withstanding voltage)

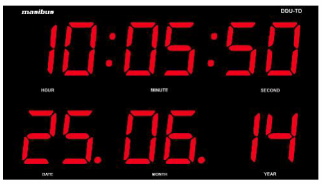
Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute
Between secondary terminals**: At least 1500 V AC for 1 minute
* Primary terminals indicate power terminals.
** Secondary terminals indicate RS232/485, IRIG-B TTL, IRIG-B Modulated and RJ45.
There is no Isolation between RS232/485 and IRIG-B TTL
Insulation resistance: 20MΩ or more @ 500 V DC between power terminals and grounding terminal

[DDU-TDC] – IP20

[DDU-DT] - IP20

[DDU-DT8] – IP20

[DDU-TM] - IP20



[DDU-TD] - IP20

[DDU-TM] – IP65

[DDU-DY] - IP20

[DDU-HZ] - IP20

[DDU-DY] – IP65

DDU-CL

[DDU-CL] – IP20

[DDU-DT] – IP65

TECHNICAL SPECIFICATIONS

Ordering Code for Time / Date Configurable Display Unit (DDU-TDC)

Model	Display Type		Mounting		Input Type 1		Input Type 2		Input Type 3		Input Type 4	
DDU	XXX		X		X		X		X		X	
	TDC	Time/Date Configurable	T	Table Top (IP20)	1	RS232/RS485	N	None	N	None	N	None
			R	Rack / Panel (IP20)			1	SNTP/NTP	1	IRIG-B MOD	1	IRIG-B TTL
			W0	Wall (IP20)			2	NTP over POE option				
			H0	Hanging Type (IP20)								

Accessories for DDU-TDC (Optional)

Extra Mounting Clamp for IP20 Enclosure

Rack/Panel	Table Top
m-MK-FPL-50-3 [177mm Height Unit]	m-MK-TT-50-2
	

Ordering Code for Time/ Date/ Day Display Unit

Model	Display Type		Mounting		Input Type 1		Input Type 2		Input Type 3		Input Type 4	
DDU	XX		X		X		X		X		X	
	TM	Time	T	Table Top (IP20)	1	RS232	N	None	N	None	N	None
	DT	Date	R	Rack/Panel (IP20)	2	RS485	1	SNTP/NTP	1	IRIG-B MOD	1	IRIG-B TTL
	DY	Day	W0	Wall (IP20)								
	TD#	Time & Date	W1	Wall (IP65)								
	CL#	Calendar	H1	Hanging Type (IP65)								
	SP*	Special										

Note: -
X - Specify From Table
\# - Available in IP20 & Table, Panel/Rack type mount only
* - For Special display type & 8 digit Date Display unit contact factory

Ordering Code for Frequency Display Unit

Model	Display Type		Mounting		Input Type	
DDU	XX		X		X	
	HZ	Frequency	T	Table Top (IP20)	1	RS232
			R	Rack/Panel (IP20)	2	RS485
			W0	Wall (IP20)	3	Ethernet
			W1	Wall (IP65)	4	Line Freq - 63 V AC
			H1	Hanging Type (IP65)	5	Line Freq - 110 V AC
					6	Line Freq - 240 V AC

Note: -
For Frequency display unit in case of Ethernet or Line Frequency input type, RS232 serial port will be given for firmware upgradation
For Display Color other than RED, please specify at the time of Order.

Accessories for Time/ Date/ Day/ Frequency Display Unit (Optional)

Extra Mounting Clamp for IP20 Enclosure

Wall		Rack/Panel			Table Top
m-MK-FW-50-1 [177mm Height Unit]	m-MK-FW-50-2 [266 & 355mm Height Unit]	m-MK-FPL-50-1 [177mm Height Unit]	m-MK-FPL-50-2 [266mm Height Unit]	m-MK-FPL-50-3 [355mm Height Unit]	m-MK-TT-50-1
					

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-79, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

Doc. Ref. DDU/R2F/0119

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409-4IN
409-6IN

Large Display Indicator

Model 409-4IN and 409-6IN are the large display Indicator which can be monitored up to distance of 160 feet (50m). 409-4IN has 100 mm Red LED display and 409-6IN has 150 mm P10 based Red LED module display. Its large digit facilitates process value to be monitored across wider geographical area in plant. It has most advanced features for monitoring and communication of process status.

Model 409-4IN / 409-6IN accepts 21 different industry standard inputs with high accuracy of 0.1% to measure temperature, pressure and other process variables. It is easy to operate and configuration is user friendly. CJC compensation for thermocouple input is done through software for higher accuracy.

Model 409-4IN / 409-6IN can be interfaced with SCADA/PLC using optional RS485 communication and analog retransmission output for process automation. It has two-way communication facility allowing user to read and write PV over Modbus between any Master device and Indicator.

Alarm can be configured for two set points which are indicated on front Status LEDs. This Indicator has SMPS power supply for smooth and reliable performance. It is also equipped with transmitter power supply.

Model 409-4IN utilizes its unique feature of LED brightness control which enables plant engineers/ operators to adjust intensity of controllers' LED display in order to achieve comfort for eyes.

Model 409-6IN display has a high brightness for outdoor application

Model 409-4IN / 409-6IN is equipped with advanced functions like digital filtering, password setting, input and output protection and square root function for optimum process functionality.

Features

- 409-4IN: 4" (100mm) Large Red LED Display
- 409-6IN: 6" (150mm) Large P10 based Red LED module
- 21 selectable input types (TC, RTD, mV, mA, V, Ω)
- Transmitter Power Supply
- RS485 serial communication (optional)
- PV write facility via Serial input
- Programmable retransmission output (optional)
- Two programmable alarm outputs (optional)
- Available with 19" Rack & IP65 Wall mount enclosure
- Display brightness control
- Serial RS485 Input (Modbus Slave Read/Write)
- Input Scalability for Linear input type
- Square Root Extraction for linear input type.
- Selectable Digital Filter 0-60 Sec
- 409-6IN display has a high brightness for outdoor application

Applications

- Temperature & process indication
- Pressure/ Level/ Flow Monitoring
- Plastics molding/extrusion temperature monitoring
- Heat treatment - furnace temperature monitoring
- Weighing platform
- Remote Process Supervision

TECHNICAL SPECIFICATIONS

Input

Input Type	Thermocouple (E, J, K, T, B, R, S), RTD (Pt100), Current, Voltage, Resistance
Display Range	Table-1
Accuracy	±0.1% of FS ± 1Digit
ADC Resolution	17 bits
Display Resolution	0.1°C/ 1 Count
Sampling Rate	4 Samples/Sec
CJC Error	±2.0 °C
Sensor open	All inputs except 0-5V, 0-10V, ± 10V, 0-20mA
Sensor Burnout current	0.5 uA (Approx.)
RTD excitation current	0.8 mA (Approx.)
NMRR	> 40 dB
CMRR	> 100 dB
Temp-co	< 100ppm for Input to Display < 150ppm for retransmission output
Input Impedance	> 1MΩ for TC, 0-2V, 0.4-2V, 0-75mV, ± 75mV > 840 kΩ for 0-5V, 1-5V, 0-10V, ±10V
Max Voltage	20VDC

Display & Keys

	409-4N	409-6IN
Process Value	4" Four-digit Seven segment Red LED	6" P10 based Red-Led High brightness module, (32X16 dots)
Status Indication	4 Red LED's for (Alarm and Tx/Rx)	
Keys	Menu, Enter, Increase, Decrease	

Output

Alarm Output (Optional)	
Relays	2 Nos.
Type	Single Change over (C, NO, NC)
Rating	5A @ 230VAC / 30VDC
Retransmission Output (Optional)	
Current	0/4-20mA @500Ω Max.
Voltage	0/1-5V, 0-10V @2KΩ Min.
Accuracy	0.25% of FS
Communication (Optional)	
Interface	RS485 (2 Wire)
Protocol	Modbus-RTU
Baud rate	4800, 9600, 19200, 38400
Transmitter Power Supply	24VDC (±10%) @50mA

Power Supply

Supply Voltage	85-265VAC/ 125-300VDC
Power consumption	409-4IN <10 VA 409-6IN <30 VA

Isolation (Withstanding voltage)

- Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
- Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
- Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute
- Between secondary terminals**: At least 500 V AC for 1 minute

* Primary terminals indicate power terminals and relay output terminals.
** Secondary terminals indicate analog I/O signal and Communication O/P.
Insulation resistance: 20MΩ or more at 500 V DC between power terminals and grounding terminal.

Physical

	409-4IN		409-6IN
Enclosure Protection	IP20	IP65	IP65
Mounting 19"	Rack / Panel Mount / Wall Mount	Wall Mount	Wall Mount
Dimensions(in mm)	440(W)x175(H) x70(D)	500(W)x300(H) x120(D)	405(W)X250(H) X90(D)(with clamp)
Panel Cutout (in mm)	444 (+0.8) x175 (+0.8)	NA	NA
Weight (Approx.)	3 Kg	8.3 Kg	5 Kg
Enclosure material	MS Powder Coated		
Terminal Cable Size	2.5mm²		
Standard Accessories	2 Nos. Clamp, 2 Handle for 19" Rack / Panel Mount	4 Nos. Wall Mounting Bracket, 3 Nos. of PG16 Gland (For Cable entry).	3 Nos. PG16 Gland

Environmental

Operating temperature	0-55 °C
Storage temperature	0-80 °C
Humidity	20-95% RH non-condensing

Table-1: Display Range

Input Type		Range
Thermocouples	E	-200 to 1000°C
	J	-200 to 1200°C
	K	-200 to 1350°C
	T	-200 to 400°C
	B	450 to 1800°C
	R	0 to 1750°C
	S	0 to 1750°C
RTD	Pt-100	-199.9 to 850.0°C
Resistance	0 - 400Ω	-1999 to 9999
	0 - 6000Ω	
Linear	1-5V /4-20mA	-1999 to 9999
	0-5V/0-20mA	
	0-2V	
	0.4-2V	
	±10 V	
	0 - 10 V	
	-10-20mV	
	±75 mV	
	0-75mV	
Serial (RS485)	PV write Facility	1999 to 9999

ORDERING CODE

Model	Input Type		Communication		Relay		Retransmission O/P		Mounting (Protection)*	
409-4IN	X		X		X		X		X	
409-6IN	1	E	N	None	N	None	N	None	P0	19" Rack (IP20)
	2	J	Y	RS485	Y	2 Relays	C	4-20mA	W0	Wall (IP20)
	3	K					D	0-20mA	W1*	Wall (IP65)
	4	T					E	1-5V		
	5	B					F	0-5V		
	6	R					G	0-10V		
	7	S								
	9	Pt-100								
	C	4-20mA								
	D	0-20mA								
	E	1-5V								
	F	0-5V								
	G	0-10V								
	H	0-2 V								
	I	0.4 – 2V								
	R	±75mV								
	U	0-75mV								
	V	0-400Ω								
	W	0-6000Ω								
	M	Serial RS485#								
	S	Special								

#When Serial input type is selected, RS485 o/p needs to be selected
*406-6IN model available in IP65 Wall mount option only

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-77, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

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UT-94

Universal Transmitter

Alarm/Trip Module

Masibus Model UT-94 is a 4 wire versatile universal transmitter that isolates & converts wide range of conventional / unconventional process inputs into standard process signals acceptable to commercially off the shelf (COTS) automation products. Signal inverting option is also available. The input circuit can accommodate a variety of input signal levels including bi-directional, reverse, true and live-zero.

A built in 4 digit display facilitates the user to monitor process value and helps in fast configuration and calibration. Model UT-94 enables analog signals to transmit without galvanic connections between the fields to the receiving instrument. This in turn allows ground or reference levels to float up to thousands of volts at its input terminals, and prevents circulating current between differing ground potentials that can contaminate input signal.

Isolation provided by Model UT-94 saves the control system from damage due to accidental application of high voltage or induced voltages on the input signal and in turn avoids wrong output signals to process. Isolation provides a good protection for sensitive system parts against voltage spikes etc.

Model UT-94 offers a wide range of input/ output signal types include mA, mV, V, RTD, TC, Resistance. Built-in transmitter power supply (TPS) can drive field transmitters in case of 4-20mA DC input. It offers excellent accuracy and stability for reliable operation in hostile environments and full isolation safely separates each input channel, each output channel and the power supply.

Model UT-94 is equipped with advanced functions like digital filtering, password setting, input and output protection and square root function for optimum process functionality.

Features

- Compact DIN rail mounting
- Digital Display
- Easy configuration using keys & display
- Micro controller based transmitter
- Measuring Parameters: RTD, TC, mV, V, mA, Ω
- Upto Two Retransmission output
- Two Relay Output (Option)
- Modbus protocol on RS485 (Option)
- Square Root Extraction for Linear input type

Applications

- Industrial process control
- Factory automation
- SCADA
- DAS
- Heat treatment furnaces
- Reheat furnaces
- Ceramic Kilns
- Glass Industry
- Water and waste water control

TECHNICAL SPECIFICATIONS

Input

Input Type	Thermocouple (E, J, K, T, B, R, S, N), RTD (PT-100), mA ,mV, V & Resistance
Display Range	Refer Table-1
Accuracy	Refer Table-1
ADC Resolution	17 bits
Display Resolution	0.1 / 1°C
Sampling Time	< 75ms
CJC Error	±2.0 °C Max
Sensor Burnout current	0.5uA
RTD excitation current	1mA Approx.
NMRR	> 50 dB
CMRR	> 120 dB
Temp-co	< 100ppm/°C
Input Impedance	> 1MΩ for Voltage, 100Ω for Current
Max Voltage	20VDC

Display & Keys

Process Value	0.3" Four-digit Seven segment, Red LED
Status	Power, RL1, RL2, Tx, Rx
Keys	3 keys for configuration, calibration and operation

Output

Relay (Option)	
Relays	2 Nos.
Type	Single Change over (C, NO, NC)
Rating	2A @ 230VAC / 30VDC
AO1	
Output Signal	4-20mA/ 0-20mA @ 750Ω Max. 1-5VDC/ 0-5VDC/ 0-10VDC @ 4KΩ Min.
Output accuracy	±0.25% of span
Temp-co	< 150ppm/°C
AO2 (Option)	
Output Signal	4-20mA/ 0-20mA @ 750Ω Max. 1-5VDC/ 0-5VDC/ 0-10VDC @ 4KΩ Min.
Output accuracy	±0.25% of span
Temp-co	< 150ppm/°C
Communication (Option)	
Interface	RS485 (2 Wire)
Protocol	Modbus-RTU
Baud rate	4800, 9600, 19200
Transmitter Power Supply	24VDC (±1V) @30mA

Power Supply

Standard	85-265VAC/ 125-300VDC
Optional	18-36VDC
Power consumption	< 10 VA

Isolation (Withstanding voltage)
Between primary terminals* and secondary terminals**: **At least 1500 V AC for 1 minute**
Between secondary terminals**: **At least 500 V AC for 1 minute**
* Primary terminals indicate power terminals and relay output terminals.
** Secondary terminals indicate I/O terminals and Communication Port.

Physical

Dimensions (mm)	75(H) x 55(W) x 110(D)
Mounting	Din Rail
Terminal Cable Size	2.5 mm²
Weight	< 250 grams
Enclosure Material	ABS
Enclosure Protection	IP20

Environmental

Operating temperature	0 to 55 °C
Storage temperature	0 to 80 °C
Humidity	20 to 95 % RH non-condensing

Table 1: Display Range

Input Type		Ranges	Accuracy
Thermocouple	E	-200 to 1000 °C	±0.1% of FS
	J	-200 to 1200 °C	
	K	-200 to 1370 °C	
	T	-200 to 400 °C	
	N	-200 to 1300 °C	
	R	0 to 1750 °C	±0.25% of FS
	S	0 to 1750 °C	
	B	450 to 1800 °C	
RTD	Pt-100	-199.9 to 850 °C	±0.1% of FS
Voltage	-10 to 500mV	-1999 to 9999	
	0/0.4 to 20mV		
	0 to 5V		
	1 to 5V		
	0 to 10V		
Current	0/4 to 20mA		
Resistance	0 to 2000Ω		

Ordering Code

Model	Input Type		APS		No of O/P		O/P type-1		O/P type-2		Relay o/p		Communication	
UT-94	X		XX		X		X		X		X		X	
	1	E	U1	85-265 VAC/ 125-300 VDC	1	One	1	4-20mA	0	None	N	None	N	None
	2	J	U2	18-36 VDC	2	Two	2	0-20mA	1	4-20mA	Y	Yes	Y	RS485
	3	K					3	1-5VDC	2	0-20mA				
	4	T					4	0-5VDC	3	1-5VDC				
	5	B					5	0-10VDC	4	0-5VDC				
	6	R					S	Special	5	0-10VDC				
	7	S							S	Special				
	8	N												
	9	Pt-100												
	C	4-20 mA												
	D	0-20 mA												
	E	1-5 VDC												
	F	0-5 VDC												
	G	0-10 VDC												
	W	0.4-2 VDC												
	X	-10-500 mV												
	Y	0-2 V												
	Z	0-2000 Ohms												
	S	Special												

Head Office: Masibus Automation And Instrumentation Pvt. Ltd.
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382044, Gujarat, India.
Tel: +91 79 23287275-77, Fax: +91 79 23287281.
E-mail: sales@masibus.com, Web: www.masibus.com

Doc. Ref.UT94/R4F/1216

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A Sonepar Company

*m*USB232

*m*USB485

USB Converter

*m*USB232
*m*USB485

The mUSB232 & mUSB485 is a family of communication devices. The models provide a simple method of adapting Industrial and commercial serial devices with RS232/485 interface to modern USB ports. Each media converter contains a small electronic circuit board mounted inside a rugged plastic enclosure capable of withstanding industrial temperature ranges. The integrated electronics also include RS232/RS485 level shifters and Tx/Rx LEDs to provide a visual indication of data traffic through the media converter.

The Cable incorporates a standard USB-A device connector for connection to an upstream host or hub port. RS232-level signals, including modem handshake signals, are available on an industrystandard DE-9P connector cable. The RS232-level data rate range is 300 baud to 1 M baud.

The media converter cable requires USB device drivers, available free in CD supplied with media converter, which is used to make the media converter appear as a Virtual COM Port (VCP). This allows existing serial communications software, such as HyperTerminal, to exchange data through the media converter to industrial RS232/RS485 peripheral devices.

Features

- USB Port powered
- Small to fit in laptop bag
- Supports Microsoft Windows® WHQL-certified, Mac OS X, Linux and Windows CE device drivers
- USB 2.0 or higher compatible port
- Baud Rate Supports: Max 1 Mbps

USB to RS232 Converter

- Convert the signals to RS232
- Port: 9 PIN DB Male connector
- Output - RS232 full Handshaking

USB to RS485 Converter

- Convert the signals to RS485 level
- Outputs: D + / D -
- Maximum 32 nodes
- 120E Termination Resistor selection

Applications

- Media converter
- Data Acquisition System
- Field Service Application

TECHNICAL SPECIFICATIONS

RS232	
RS232 data signals	TxD, RxD, RTS, CTS, DSR, DTR, DCD, RI, GND
Serial port speed	300 Baud to 1M Baud
Connector	9 PIN DB Male Connector
Serial Communication parameters	Parity: None, Even, Odd Data bits: 7, 8 Flow control: RTS/CTS, DSR/DTR X-ON/OFF, None Stop bits: 1, 2
Cable	1 meter

RS485	
RS485 data signals	D+ & D- (Selectable Internal 120Ω Termination Resistor)
Baud Rate	Max 1 Mbps

USB	
USB Full speed	12 Mbps on USB version 1.0/2.0 or Higher
Connector	USB Type A Male
Standard	2.0 (Backward Compatible)
FIFO	256 byte transmit buffer, 256 byte receive buffer

Indication	
Indication	Rx & Tx traffic LED Indication on media converter

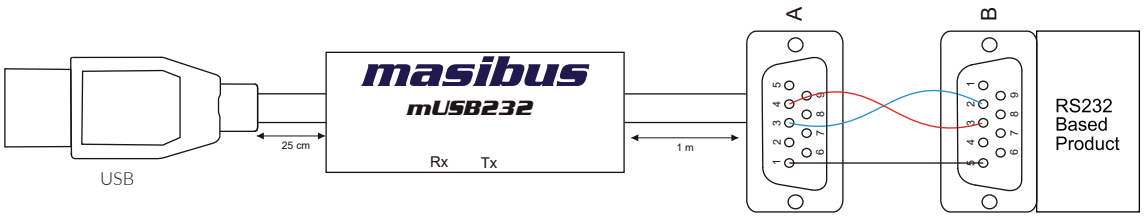
Driver Support	
Driver Support	Microsoft Windows® WHQL-certified, Mac OS X, Linux and Windows CE device drivers

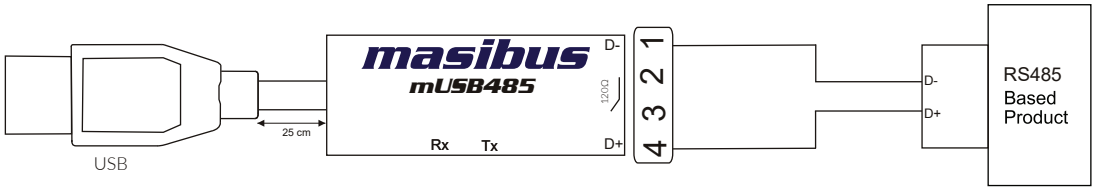
Power	
Power	5VDC on USB port. No external power media converter required
Current Consumption	20mA (Typ), 50mA (Max)

Physical	
Module Dimension in mm (Excluding connector & cable)	12.5 (H) X 24 (W) X 50 (L)

Environmental	
Operating Temperature	-20°C to 80°C
Humidity	30-95% RH non-condensing

Connection Details





Ordering Code

Model	Description
mUSB232	USB - RS232 Converter
mUSB485	USB - RS485 Converter

Accessory
USB device driver CD

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E-mail: sales@masibus.com, Web: www.masibus.com

Doc. Ref. mUSB/R0F/0615

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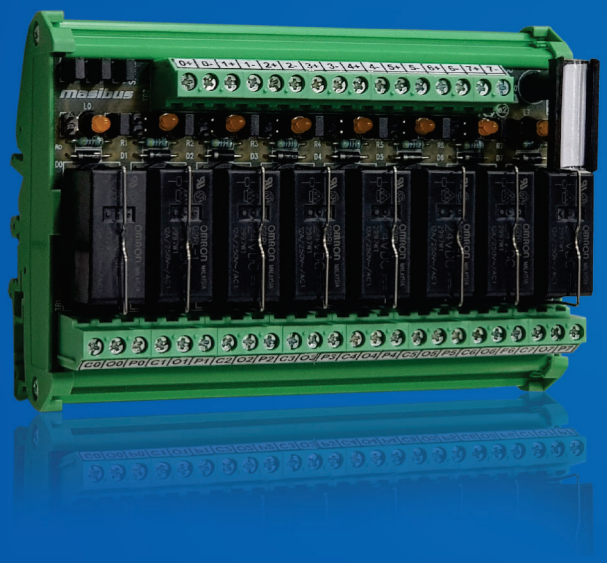


MAS-DO-RL
Field Interface Board
8/16 Relay Output

Masibus Relay Output Field Interface Board has 08/16 channels Relay output with switching current of 12A @ 250V AC/24V DC. The Relay Board has unique features like Positive/Negative looping.

It is compact, universal DIN rail mounted with labeled input and output connections

Features

- Relay Module with 8/16 – Channel
- Coil Voltage : 5V DC/12V DC/24V DC/48V DC
- Freewheeling diode across the relay coil for protection
- Jumpers for selection between positive/negative looping
- Available with pluggable relays
- Mounting on DIN carrier rail

Applications

- Convert open collector to relay Output
- SCADA/DCS/PLC

TECHNICAL SPECIFICATIONS

General Data	
Relay Make	OMRON G2RL Series
Input Indication	Orange LED for input status indication
Relay Protection	Freewheeling diode across relay coil
Positive/Negative Looping	Common, Remove all Jumpers to make relay independent

Relay Contact data	
Rated current (resistive load)	12A at 250V AC 12A at 24V DC
Maximum Switching Voltage	440V AC, 300V DC
Contact Resistance	100MΩ Maximum
Relay on time	15m Sec Max
Relay off time	5m Sec Max
Contact Type	1C/O (SPDT)
Insulation resistance	1000MΩ min

Relay Coil data				
Rated Coil Voltage	5V DC	12V DC	24V DC	48V DC
Coil Resistance (Ohms)	62.5	360	1440	5358
Rated Coil current	80	33.30	16.7	8.96
Power Consumption (mW)	400	400	400	400
Must Operate Voltage	75% Max of rated voltage			
Must release Voltage	10% Max of rated voltage			
Maximum Voltage	130% at 85 °C			

Isolation	
Isolation	1.5 KVAC, 50/60 Hz, 1 min between coil and contact
Insulation Resistance	1000MΩ (At 500 VDC) between coil and contact

Physical	
Dimensions in mm (L x W x D)	128X90X60 (8 ch.) 252X90X60 (16 ch.)
Mounting	DIN Rail
Terminal Block	Screw type PCB Mounted
Terminal Cable Size	2.5mm^2
Housing color	Green
Weight	8-Ch. Relay Module: 260 gm Approx. 16-Ch. Relay Module: 620 gm Approx.

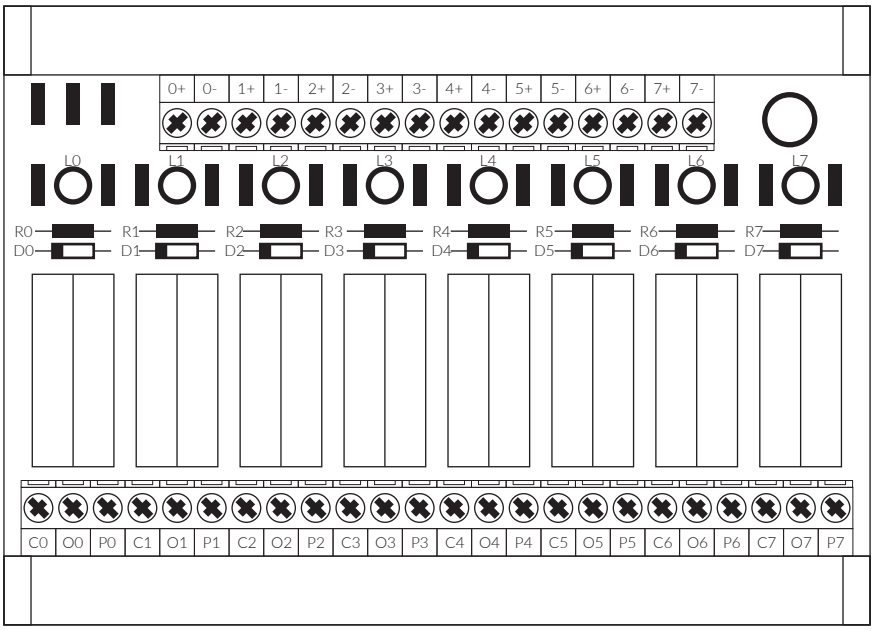
Environment	
Operating Temperature	0 to 55 °C
Storage Temperature	0 to 80 °C
Humidity	30-95% RH (Non-Condensing)
ROHS Compliant	All components and PCBs are ROHS approved

TECHNICAL SPECIFICATIONS

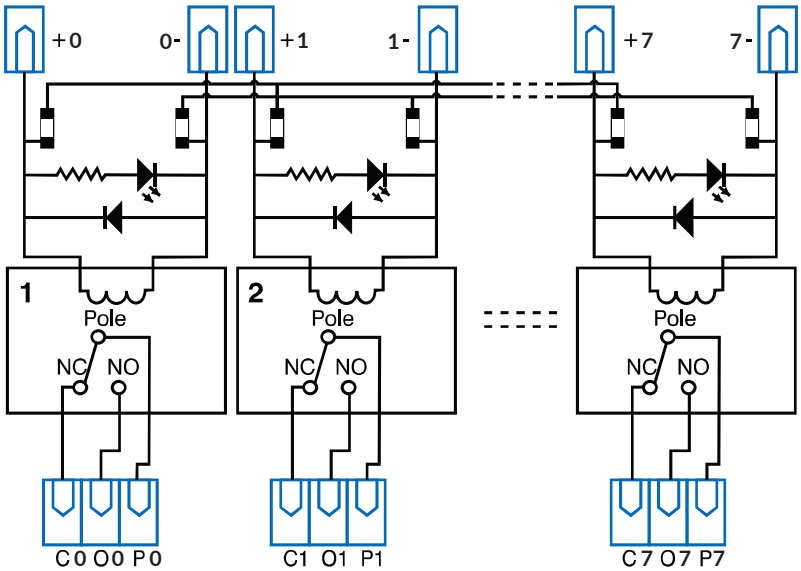
ORDERING CODE

Model No	No of Channels		Changeover		Voltage	
MAS-DO-RL	XX		XX		XX	
	08	8 channel	1CO	1 Change over	05	5V
	16	16 channel			12	12V
					24	24V
					48	48V

Layout Diagram



Connection Diagram



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Doc. Ref. FIB MAS-DO-RL/R1F/0318

PULS

PIANO

DIN rail power supplies | 36 - 480W | 1-phase

Simplicity. Without compromises.

Price advantage thanks to basic functionality

High efficiency, lifetime and reliability

Robust and light-weight polycarbonate housing

PIANO

The PIANO product family has been developed for users who require a **simple and reliable** power supply.

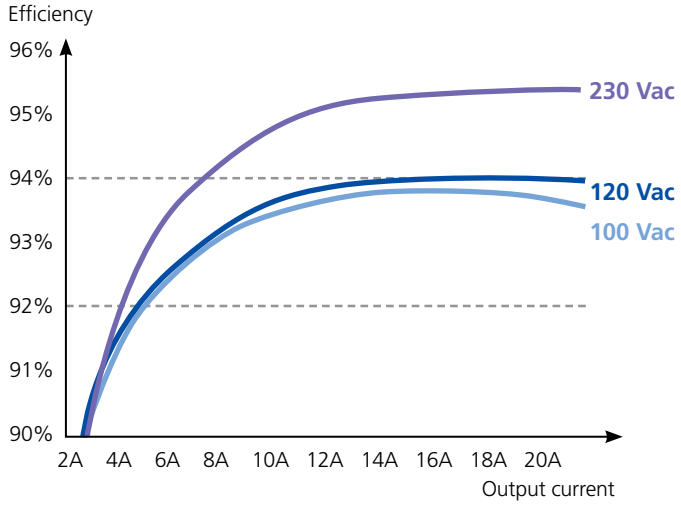
The focus of PIANO power supplies is on the **core features**: Efficiency, lifetime, reliability and size. Expensive additional functions, such as power reserves, were deliberately omitted. This allows a **cost-oriented design** without compromising on quality.
PIANO power supplies are **perfectly suited** for a wide variety of applications.

More demanding applications can be realised using the fully equipped DIMENSION products.

At a glance

Reduce costs

- **High efficiency**
  Low power losses lead to a long lifetime and continuously reduced operating costs.
- **Compact design**
  Its narrow width saves costly space in the system.
- **Single-board design**
  All components are assembled on one PC-board. The cost savings in the production and testing process are reflected in the prices of the products.



Technical data

	36W PIM36	60W PIM60		90W PIM90		120W PIC120		240W PIC240		480W PIC480		
Output												
Output current, nominal	1.5A	5A	2.5A	3.8A	3.8A	5A	5A	10A	10A	20A	20A	10A
Output voltage, nominal	24V	12V	24V	24V	24V	24V	24V	24V	24V	24V	24V	48V
DC output voltage range	24-28V	12-15V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	24-28V	48-56V
Hold-up time, typ. at 230V_{ac}	161ms	114ms	113ms	119ms	119ms	33ms	50ms	33ms	32ms	30ms	27ms	27ms
Input												
AC input voltage, nominal	100-240V	100-240V	100-240V	100-240V	100-240V	200-240V	100-120V[1] 200-240V[1]	200-240V	100-240V	200-240V	100-240V	100-240V
AC input voltage range	90-264V	90-264V	90-264V	90-264V	90-264V	180-264V	90-132V[1] 180-264V[1]	180-264V	90-264V	180-264V	90-264V	90-264V
Power factor, typ.	0.46	0.49	0.47	0.45	0.45	0.54	0.54	0.52	0.93	0.99	0.97	0.97
Input inrush current, typ. AC (+40°C)	TBD	31A	35A	40A	40A	28A	33A	48A	26A	26A	35A	35A
Operational temperature range	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Efficiency	> 90%	90.7%	91.8%	93.8%	93.8%	90.5%	92.3%	91.4%	95.2%	95.7%	95.3%	95.7%
MTBF SN 29500, IEC61709 at +40°C	TBD	TBD	TBD	TBD	TBD	1720kh	1379kh	791kh	822kh	482kh	704 kh	TBD
Minimum lifetime expectancy at +40°C and 100% load	115 kh 100Vac	89 kh 100Vac	115 kh 100Vac	102 kh 100Vac	102 kh 100Vac	47kh	83kh	38kh	74kh	51kh	102kh	138 kh
Mechanical data												
Dimensions WxHxD	22.5x90x91mm	36x90x91mm	36x90x91mm	36x90x91mm	36x90x91mm	39x124x124mm	39x124x124mm	49x124x124mm	49x124x124mm	49x124x124mm	59x124x127mm	59x124x12mm
Weight	138g	225g	220g	270g	270g	350g	370g	550g	540g	620g	810g	810g
DC-OK relay contact	-	-	-	-	-	.241C yes/.242C no	yes	yes	yes	yes	yes	yes
Connection terminals	push-in	PIM60.121: push-in PIM60.125: screw	PIM60.241: push-in PIM60.245: screw	push-in	screw	screw	screw	screw	screw	screw	screw	screw
Order number	**PIM36.241**	**PIM60.121 PIM60.125**	**PIM60.241 PIM60.245**	**PIM90.241**	**PIM90.245 PIM90.245-L1 [2]**	**PIC120.241C PIC120.242C**	**PIC120.241D**	**PIC240.241C**	**PIC240.241D**	**PIC480.241C**	**PIC480.241D [3]**	**PIC480.481D [3]**

General data for all versions:

Power reduction	2.5%/°C from +55°C (PIC480.241C: 1.7%/°C)
Humidity	5% to 95% r.h.
Installation height (with derating)	0 to 2,000m (up to 5,000m)
Shock test	30g 6ms, 20g 11ms in accordance with IEC60068-2-27
Warranty	3 years

Standards and approvals

CE, cULus LISTED [4], IECEE CB Scheme [4], DNV·GL dnvgl.com/af [5], ABS [5], EAC [6]

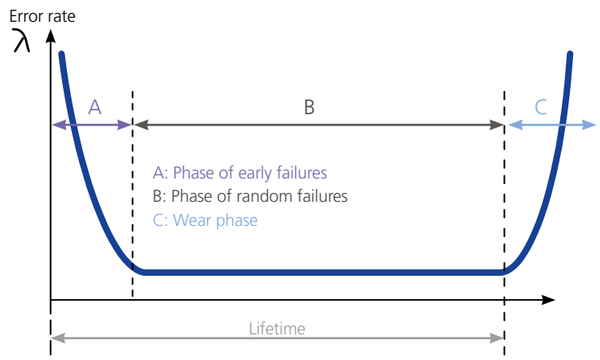
Annotations

1) Auto-select 2) NEC Class 2 version 3) With aluminum housing 4) PIM36.241, PIM60.121 / -125, PIM60.241 / -245, PIM90.241 / -245 / -245-L1, PIC480.241D, PIC480.481D in preparation
5) PIC120.241C, PIC120.242C, PIC240.241C 6) PIC480.481D in preparation

All values are valid at 230 Vac, 50Hz, +25°C ambient temperature after a warm-up time of 5 minutes, unless stated otherwise.
All technical data is subject to change without notice.

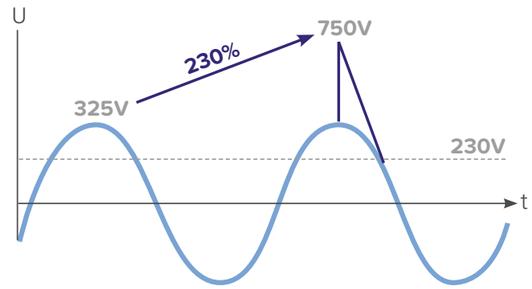
Extend availability

- **High reliability**
  PIANO power supplies are characterised by a high MTBF and thus a low failure rate in phase B (see graph).
- **DC-OK**
  The DC-OK signal and the relay contact (PIC devices) for remote monitoring facilitate maintenance and increase system availability.



Increase safety

- **Robust polycarbonate**
  Due to very high efficiency values the housing is not needed for heat dissipation. This allows the use of light-weight plastic housings.
  The material has proven to be very reliable throughout all stress tests (shock, vibration, temperature).
- **High immunity**
  The devices can withstand powerful input transients up to to 230% of the nominal input voltage. This high immunity is ensured across the entire load range.



Well-engineered.
Down to the smallest detail.

Monitoring function
DC-OK-signal and relay contact

Cost-oriented design
All components on one PC-board

Robust polycarbonate housing
Resistant to heat and vibration

Long lifetime
Components crucial for determining the product's lifetime are placed in the coolest spots

Flexible selection
Versions with and without wide-range input

High MTBF
Reduced number of components reduces the probability of failure

Innovation. PIANO mini.

Minimum size. Maximum effect.

The modern circuit design requires little space. 90W can be integrated into a housing with only 36 x 90 x 91mm. The high efficiency ensures lower power losses – even at no-load (< 0.5W).

Push-in or screw terminals

Users have the choice between push-in and screw terminals. The push-in terminals facilitate time-saving installation without tools, and are extremely reliable in the event of shock and vibrations.

36W

PIM36
available soon

60W

PIM60

90W

PIM90
also available as
NEC Class 2 version

Redundancy module

PIANO PIRD20.241

- Two inputs with common output
- Two diodes (common cathode)
- DC12-28V ± 25% wide-range input
- Full output power between -40°C and +55°C
- Width only 39mm
- Simple wiring: Distributor terminal for negative pole available

Benefits

Secure your system with the PIRD20.241.

This diode redundancy module with basic functionality is the perfect complement to the PIANO DIN rail power supplies.

Useful to build cost-effective 1+1 redundancy systems.

www.pulspower.com