# masibus

# 8040

# Data logger

Masibus Datalogger Model 8040 is a high performance Data Acquisition/Data logging Device, designed to work as a standalone unit or with PC Interface. Model 8040 is available in 19" sub-rack with 10 I/O slots, the architecture supports a max of 8 universal Analog input modules and max of 2 Digital output modules (1 DO only possible in case of Ethernet or USB o/p in Main Controller), Power Supply and Main Controller Module.

The 16 channel Analog Input (AI) Module is Universal and supports 8 thermocouples types , 2 RTD types and Voltage, each module has a high resolution, fast ADC and delivers data update rate in 3 seconds for all 16 channels, the AI module is available in channel to channel Non-Isolated differential and channel to channel Isolated Differential configurations. Each channel has 4 programmable Alarm/Trip set points for comparison and generation of hard/soft digital outputs

The Logging function allows user to setup channels for real-time logging with time-stamp, Masibus mACplus software works on windows platform and is used for datalogger configuration, calibration and retrieving logged data to PC.

Optionally, operator terminal is used for local display, configuration and programming of datalogger, Operator terminal is equipped with 24 keys and 2x16 alphanumeric LCD screen as Human machine interface.

Two types of digital output modules are available as option, 8 Channel relay module and 16 Channel open collector module, the digital outputs are freely mapped to input channels and generate Alarm/Trip or status outputs to annunciate input channels condition.

For communication the unit has 2 serial ports dedicated for user interface, enabled with Modbus RTU protocol, one additional serial port is provided for operator terminal or HMI interface. Ethernet port and USB port is also available as an option.

## Features

- 16 - 128 channels configuration
- Scans 128 channels in 3 seconds
- Two user dedicated serial communication Ports + one OT/HMI port
- Ethernet port / USB port (optional)
- 2 x 16 character LCD Operator display terminal
- Universal input for each channel
- Channel to channel input isolation option
- Battery backed memory with RTC
- Periodic Memory (25 MB)
- Host computer/ operator terminal programmable
- Pre Fab cable with DIN terminal Modules as accessories
- Field to Logic Isolation on Input cards

## Applications

- Data acquisition and control application
- Transformer monitoring and protection
- Gas detection
- Process monitoring
- Vibration Monitoring
- Boiler tubes monitoring
- Pharma process validation
- Heat Tracing circuit monitoring and control
- RTU
- Remote I/O for PLC/DCS/SCADA
- Environmental data monitoring

# Technical Specifications

## Input

| | |
|---|---|
| Input Type (Field selectable for each channel) | Thermocouple: E, J, K, T, B, R, S, N<br>RTD: PT-100 (3 wire), NI-120<br>Voltage:0/1-5V;Current:0/4-20mA (Ext.250Ω) |
| No of Inputs | 16 Nos per card |
| Input Range | Refer Table-1 |
| Accuracy | ±(0.1% of Full Scale +/- 1digit) |
| ADC Resolution | 16 bits |
| CJC Error | ±2 °C maximum |
| Sensor Burnout current | 0.4µA |
| RTD Excitation current | 500µA |
| Data Update Rate | 3 sec |
| NMRR | > 40dB |
| CMRR | > 120dB |
| Temp-co | < 100ppm |
| Input Impedance | > 2 MΩ |
| Max Voltage | 20VDC |
| Field to logic Isolation | 1500VAC |
| Channel to channel Isolation for Isolated Mux Card option | 125VAC/300VDC |
| Open Sensor for TC/RTD/V | Programmable upscale or downscale common for all channels |

## Status Indication

| | |
|---|---|
| Status LEDs | Power ON<br>Main Controller Module: Status, Communication<br>Analog Module: Status ,<br>Relay and OC Module: Channel Status and Module status |
| Switch | Power ON/OFF Switch |

## Main Controller

| | |
|---|---|
| CPU | 32 Bit Micro – Controller |
| Watchdog Timer | Yes |
| Real Time Clock | Yes |
| Width | 10T(Std)<br>16T(in case Ethernet or USB port option selected) |

## Output

**Relay Output (Optional)**

| | |
|---|---|
| Relays | 8 Nos per card |
| Connector | 25 PIN D type |
| Rating | 2A @ 250 V AC, 30V DC max |
| Set Points | 2 or 4 |
| Types | L-VL, L-H, H-VH, VL-L-H-VH |
| Response time | 3 sec max |

**Open Collector Output (Optional)**

| | |
|---|---|
| No. of outputs | 16 Nos per card |
| Connector | 25 PIN D type |
| Rating | 100mA @ 30V DC max |
| OC response time | 3 sec max |

**Communication Output RS422 for OTU**

| | |
|---|---|
| No of port | 1 no max |
| Interface | RJ45 |
| Protocol | Modbus-RTU Slave |
| Baud Rate | 19200 bps |

**Communication Output RS485 / RS232 (switch selectable)**

| | |
|---|---|
| No of ports | 2 nos max |
| Interface | 2 Wire, EIA RS485 |
| Protocol | Modbus-RTU Slave |
| Baud Rate | 9600 or 19200 bps |

**Communication Output Ethernet[1] (Optional)**

| | |
|---|---|
| No of port | 1 no max |
| Interface | RJ45 |
| Protocol | Modbus-TCP/IP (Modnet)  Slave |
| Speed | 10/100 Mbps |

**USB Port[1] (Optional)**

| | |
|---|---|
| No of port | 1 no max |
| Standard | 2.0 |
| Fetched Data Format | Standard Tabular or AES-128 bit encypted (Optional) |
| Data File Format | *.xls |
| Max. USB pen drive size | 4GB supported with FAT16/FAT32 formatting |

**Data Logging▲**

| | |
|---|---|
| Logged data retrieval | Through mAC-plus software using Modbus protocol in excel / pdf format (optional) |
| Periodic Logging Memory Size | 25 MB |

**Operator Terminal (Optional)**

| | |
|---|---|
| Display | 2 X16 Large Character LCD Display with backlit |
| Keys | 24 keys membrane keypad |
| Communication Interface | RS422 – 4 wire |

**Power Supply**

| | |
|---|---|
| Datalogger | 85 to 265VAC or 120 to 370VDC; 50/60Hz +/- 3% |
| Operator Terminal | 24V DC +/-10% |
| Power Consumption | Datalogger ≤ 35 VA<br>Operator Terminal < 2.5 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 I/O signal and Communication O/P.
**Insulation resistance:** 50MΩ @ 500V DC or more between power terminals and grounding terminal.

## Physical

| | |
|---|---|
| Dimension (mm) | Datalogger:132.5(H) x  482(W) x 260(D)<br>Operating Terminal:192(H) x 96(W) x 45(D) |
| Mounting | Datalogger: 19" sub-Rack Mount<br>Operating Terminal: Panel Mount |
| Weight | Datalogger: 4.5 Kg; OT: 650 gms |

## Environmental

| | |
|---|---|
| Operating Temperature | 0-55 °C |
| Humidity | 30 to 90% RH non condensing |

### Table 1: Display Range

| Input Type | Ranges | Resolution |
|---|---|---|
| J | -200 °C to +760 °C | 1 °C |
| K | -200 °C to +1350 °C | 1 °C |
| T | -200 °C to +400 °C | 1 °C |
| E | -200 °C to +1000 °C | 1 °C |
| B | +450 °C to 1750 °C | 1 °C |
| S | 0 °C to +1750 °C | 1 °C |
| R | 0 °C to +1750 °C | 1 °C |
| N | -230 °C to +1270 °C | 1 °C |
| Pt100 | -200.0 °C to +850.0 °C | 0.1 °C |
| NI-120 | -70.0 °C to 279.0 °C | 0.1 °C |
| 0/4 to 20mA (Ext. 250Ω)<br>0/1 to 5V | -19000 to 19000 | 1 count |

## Ordering Code

| Model | No of Input (max 8 cards) | | Input Type/ Configuration | | | | Operator Terminal | | Aux Output per (max 2 cards[1]) | Relay (card) | OC (card) | Signal Termination | | | Communication | | | USB Port[1] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8040 | X | | X | | X | | X | | X | Relay (card) | OC (card) | X | | | XX | | | X | |
| | A | 16 | N | Non Isolated | 1 | E | N | None | XX | 0 | 0 | N | | None | 2X | | 2 RS232/RS485 | N | None |
| | B | 32 | I | Isolated | 2 | J | 1 | Yes | RX | 1 | 0 | 1 | | Pre Fab cable | 2E[1] | | 2 RS232/RS485 + 1 RJ45 | 1 | Yes |
| | C | 48 | | | 3 | K | | | RO | 1 | 1 | 2 | | Pre Fab cable with DIN terminal Modules | | | | | |
| | D | 64 | | | 4 | T | | | XO | 0 | 1 | | | | | | | | |
| | E | 80 | | | 5 | B | | | OO[1] | 0 | 2 | | | | | | | | |
| | F | 96 | | | 6 | R | | | RR[1] | 2 | 0 | | | | | | | | |
| | G | 112 | | | 7 | S | | | | | | | | | | | | | |
| | H | 128 | | | 8 | N | | | | | | | | | | | | | |
| | | | | | 9 | Pt 100, 3W | | | | | | | | | | | | | |
| | | | | | M | NI -120 | | | | | | | | | | | | | |
| | | | | | C | 4-20mA | | | | | | | | | | | | | |
| | | | | | D | 0-20mA | | | | | | | | | | | | | |
| | | | | | E | 1-5VDC | | | | | | | | | | | | | |
| | | | | | F | 0-5VDC | | | | | | | | | | | | | |
| | | | | | S | Special# | | | | | | | | | | | | | |

**X** - Specify from table
**#** - Consult Factory
[1] with Ethernet or USB  option:  Only One No of DO Slot will be available & Width of Main Controller will be 16T

**▲ Logging Period in Days =  (Total records x Logging time in seconds) / (3600 x 24)**
**Total records = 26000000 / [12+(No. of channels x 2)]**