The GP-4 and Mark-4 Yo-Yo® sensors are designed to provide accurate and reliable inventory management information for tanks and silos.

The GP-4 is housed in a NEMA 4 enclosure. The Mark-4 Yo-Yo® sensor is housed in a NEMA 4/7/9 enclosure. The Binderate remote display/programmer can request readings, monitor up to 99 GP-4 and Mark-4 sensors, and program silo parameters. The display/programmer allows a user to configure a single sensor or a whole system. An adjustable autotimer allows the user to set automatic measurement cycles ranging from 2 minutes to 1 week. While in operating mode, the display will show the sensor address, sensor name, measurement in the specified units, percentage, display mode and the status of the current device.

In addition, both the GP-4 and Mark-4 sensors can be interfaced to a PC using iLEVEL® software. iLEVEL® provides all the capabilities of the display/programmer plus the added ability to trend historical data.

HELEVEL inventory management software is available for this product. See specification sheet LBY 280187.

**Remote Display/Programmer**

- **Power Requirements:** Powered from Yo-Yo® sensor (9-24 VDC); with optional heater, 120/240 VAC required
- **Operating Temperature:** 4°F to 158°F (20°C to 70°C); with optional heater: -40°F to 158°F (-40°C to 70°C)
- **Communication:** RS-485 MODBUS Optional integral modem
- **Sensors:** Up to 99
- **Display:** 4 lines by 20 characters backlit LCD display
- **Keypad:** NEMA 4X soft-touch
- **Enclosure:** NEMA 4X molded liberglass polyester

**Communications**

- **Wiring Requirements:** Belden® 9842, 4-wire, shielded cable recommended
- **Wiring Distance:** 4000 ft maximum
- **Speed:** 11.5 Kbps
- **Protocol:** MODBUS
- **Interface:** RS-485
- **Internal Modem:** Optional 56K Modem

**Specifications**

- **Dimensions:**
  - GP-4
    - NEMA 4
    - Surface mount components
  - Mark-4
    - NEMA 4/7/9
    - Surface mount components
    - Hazardous area approved

- **Features and Benefits**
  - Silos up to 100 ft (30.5m)
  - Large range of silo heights can be accommodated
  - 1cm (0.39 inches) Resolution
  - Accurate readings
  - Isolated 4-20mA Output with Adjustable Span (Reversible)
  - No loop isolator is required when connecting to a PLC or DCS
  - RS-485 Communication
  - MODBUS protocol

- **Remote Display/Programmer with Keypad**
  - 4-line x 20-character backlit LCD display
  - Programmable sensor names and ranges
  - Enable/Disable network addresses

**How to Order**

- **Design Level**
  - Cable: 1 = Braided Polyester
    - 2 = Monofilament (Max length 40 ft. (12.19m)
- **Sensing Weight**
  - P = Plastic, Standard
  - D = Stainless Steel Bob
  - F = Stainless Steel Float
  - S = Plastic Spike Weight
  - LP = Low Density Plastic Weight
  - LS = Low Density Stainless Steel Weight
  - PB = PVC jacketed Bob (See Note 1)

- **Output**
  - MODBUS, 4-20mA
  - M = Modem (See Note 3)
  - N = No Modem

- **Voltage**
  - 1 = 115 VAC
  - 2 = 230 VAC

- **Heater**
  - N = Without Motor Heater
  - Y = With Motor Heater

- **GP-4 & Mark-4 Yo-Yo®**
  - LBY-4 = GP-4 (NEMA 4)
  - LHY-7 = Mark-4 Yo-Yo® (NEMA 4/7/9 Explosion proof/Dust Ignition Proof (See Note 4)

**Note:**
- 1: Specify monofilament cable
- 2: For operation below 32°F (0°C)
- 3: Maximum one modem allowed per system.
- 4: UL approved to CSA standards
Power Requirements:
- 115 VAC or 230 VAC

Power Consumption:
- Quiescent: 115 VAC, ±10%, 50/60 Hz, 4 watts (with power to remote display)
- Operating: 115 VAC, ±10%, 50/60 Hz, 32 watts (with heater, add 10 watts to above)

Operating Temperature:
- 32° F to 120° F (0° C to 49° C), with heater: 31°F to 120°F (35°C to 49°C)

Measurement Span:
- Up to 100 ft standard

Repeatability:
- 2 cm (0.8 in)

Resolution:
- 1 cm (0.39 in or 0.033 ft)

Analog Output:
- 4-20mA optically isolated (user sourced) into 600 ohms maximum

Communication:
- RS-485 MODBUS

Enclosure Material:
- Frame: Minlon® (GP-4)
- Cover: low density polyethylene (GP-4)
- Polyester coated, cast alum. housing (Mark-4)

Enclosure Rating:
- NEMA 4 (GP-4)
- NEMA 4/7/9 (Mark-4)

Mounting:
- 3" NPT

Conduit Entry:
- 2 each ¾" NPT (GP-4)
- 3 each ¾" NPT (Mark-4)

Weight:
- 13 lbs (6 kg) (GP-4)
- 26 lbs (12 kg) (Mark-4)

Air Purge Connection:
- ½" NPT

Cable:
- Braided polyester; monofilament (liquid/solid interface)

Automatic Timer:
- From 2 minutes to 9999 minutes (approximately 1 week)

Approvals GP-4:
- UL, FM, CSA, CE

Hazardous Location Approvals Mark-4:
- FM, CSA, CE, and ATEX-Dust

### Display/Programmer

The display/programmer allows a user to configure a single sensor or a whole system. An adjustable autotimer allows the user to set automatic measurement cycles ranging from 2 minutes to 1 week. While in operating mode, the display will show the sensor address, sensor name, measurement in the specified units, percentage, display mode and the status of the current device.

### Features and Benefits

**Remote Sensor Setup and Configuration**
- Allows end user to set-up system from any location

**Remote Measurement Request and Display**
- Monitors up to 99 sensors from up to 4000 ft

**4-line x 20 Character Backlit LCD Display**
- Easy to read level, sensor name and status

**RS-485 Communication**
- MODBUS protocol

**Optional Integral Telephone Modem**
- Allows users to access information via remote PC

**Optional Heater**
- Keeps system running smoothly in temperatures below -4° F (20° C)

### Design Level

- **0** = No
- **1** = Yes

**Modem (See Note 2)**

**Heater (See Note 1)**

- A = No Heater
- B = 115 VAC Heater
- C = 230 VAC Heater

### Communications

- M = MODBUS

**Note 1:** For operation below -4° F (20° C)
**Note 2:** Maximum one modem allowed per system

### System Configuration

![System Configuration Diagram](image-url)
Specifications

Power Requirements: 115 VAC or 230 VAC

Power Consumption:
Quiescent: 115 VAC, + 10%, 50/60 Hz, 4 watts (with power to remote display)
Operating: 115 VAC, + 10%, 50/60 Hz, 32 watts (with heater, add 10 watts to above)

Operating Temperature: 32° F to 120° F (0° C to 49° C); with heater: -31° F to 120° F (-35° C to 49° C)

Measurement Span: Up to 100 ft standard

Repeatability: 2 cm (0.8 in)

Resolution: 1 cm (0.39 in or 0.033 ft)

Analog Output: 4-20mA optically isolated (user sourced) into 600 ohms maximum

Communication: RS-485 MODBUS

Enclosure Material: Frame: Minlon® (GP-4)
Cover: low density polyethylene (GP-4)
Polyester coated, cast alum. housing (Mark-4)

Enclosure Rating: NEMA 4 (GP-4)
NEMA 4/7/9 (Mark-4)

Mounting: 3" NPT

Conduit Entry: 2 each ¾" NPT (GP-4)
3 each ¾" NPT (Mark-4)

Weight: 13 lbs (6 kg) (GP-4)
26 lbs (12 kg) (Mark-4)

Air Purge Connection: ¼" NPT

Cable: Braided polyester; monofilament (liquid/solid interface)

Automatic Timer: From 2 minutes to 9999 minutes (approximately 1 week)

Approvals GP-4: UL, FM, CSA, CE

Hazardous Location Approvals Mark-4: FM, CSA, CE, and ATEX-Dust

Display/Programmer

The display/programmer allows a user to configure a single sensor or a whole system. An adjustable autotimer allows the user to set automatic measurement cycles ranging from 2 minutes to 1 week. While in operating mode, the display will show the sensor address, sensor name, measurement in the specified units, percentage, display mode and the status of the current device.

How to Order

IBY-4 M

- Design Level
0 = No
1 = Yes

Modem (See Note 2)
A = No Heater
B = 115 VAC Heater
C = 230 VAC Heater

Communications
M = MODBUS

Note 1: For operation below -4°F (-20° C)

Note 2: Maximum one modem allowed per system

Features and Benefits

Remote Sensor Setup and Configuration
Allows end user to set up system from any location

Remote Measurement Request and Display
Monitors up to 99 sensors from up to 4000 feet

4-line x 20 Character Backlit LCD Display
Easy to read level, sensor name and status

RS-485 Communication
MODBUS protocol

Optional Integral Telephone Modem
Allows users to access information via remote PC

Optional Heater
Keeps system running smoothly in temperatures below -4° F (-20° C)

System Configuration

From 2 minutes to 9999 minutes (approximately 1 week)
**Remote Display/Programmer**

**Power Requirements:** Powered from Yo-Yo® sensor (9-24 VDC); with optional heater, 120V/240 VAC required

**Operating Temperature:** 4°F to 158°F (20°C to 70°C), with optional heater: -4°F to 158°F (-40°C to 70°C)

**Communication:** RS-485 MODBUS
 Optional integral modem

**Sensors:** Up to 99

**Display:** 4 lines by 20 characters backlit LCD display

**Keypad:** NEMA 4X soft-touch

**Enclosure:** NEMA 4X molded libreglass polyester

**Communications**

- **Wiring Requirements:** Belden® 9842, 4-wire, shielded cable recommended
- **Wiring Distance:** 4000 ft maximum
- **Speed:** 1.15 Kbps
- **Protocol:** MODBUS
- **Interface:** RS-485
- **Internal Modem:** Optional 56K Modem

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**Features and Benefits**

- Large range of silo heights can be accommodated
- Accurate readings
- Isolated 4-20mA Output with Adjustable Span (Reversible)
- No loop isolator is required when connecting to a PLC or DCS

**RS-485 Communication**

- MODBUS protocol

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**Mark-4/GP-4 Yo-Yo®**

The GP-4 and Mark-4 Yo-Yo® sensors are designed to provide accurate and reliable inventory management information for tanks and silos.

The GP-4 is housed in a NEMA 4 enclosure. The Mark-4 Yo-Yo® sensor is housed in a NEMA 4/7/9 enclosure. The Bindicator remote display/programmer can request readings, monitor up to 99 GP-4 and Mark-4 sensors, and program silo parameters. The display/programmer allows a user to configure a single sensor or a whole system. An adjustable autometer allows the user to set automatic measurement cycles ranging from 2 minutes to 1 week. While in operating mode, the display will show the sensor address, sensor name, measurement in the specified units, percentage, display mode and the status of the current device.

In addition, both the GP-4 and Mark-4 sensors can be interfaced to a PC using iLEVEL™ software. iLEVEL™ provides all the capabilities of the display/programmer plus the added ability to trend historical data.

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**How to Order**

**Design Level**

- **Cable:**
  - 1 = Braided Polyester
  - 2 = Monofilament (Max length 40 ft (12.19m)

- **Sensing Weight:**
  - F = Plastic, Standard
  - D = Stainless Steel Bob
  - S = Plastic Spike Weight
  - LP = Low Density Plastic Weight
  - LS = Low Density Stainless Steel Weight
  - PB = PVC jacketed Bob (See Note 1)

- **Output:**
  - MODBUS, 4-20mA
  - MODBUS

- **Modem**
  - M = Modem (See Note 3)
  - N = No Modem

- **Voltage:**
  - 1 = 115 VAC
  - 2 = 230 VAC

- **Heater**
  - N = Without Motor Heater
  - Y = With Motor Heater

**GP-4 & Mark-4 Yo-Yo®**

- LBY-4 = GP-4 (NEMA 4)
- LHY-7 = Mark-4 Yo-Yo® (NEMA 4/7/9 Explosion proof/Dust Ignition Proof) (See Note 4)

- **Note 1:** Specify monofilament cable
- **Note 2:** For operation below 32°F (0°C)
- **Note 3:** Maximum one modem allowed per system
- **Note 4:** UL approved to CSA standards

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**Specifications**

- **Dimensions**

- **Power Requirements:**
  - GP-4: NEMA 4
  - Mark-4: NEMA 4/7/9

- **Remote Display/Prrogrammer**

- **Dimensions**

- **Power Requirements:**
  - GP-4: NEMA 4
  - Mark-4: NEMA 4/7/9

- **Communications**

- **Wiring Requirements:**
  - Belden® 9842, 4-wire, shielded cable recommended

---

**How to Order**

**Design Level**

- **Cable:**
  - 1 = Braided Polyester
  - 2 = Monofilament (Max length 40 ft (12.19m)

- **Sensing Weight:**
  - F = Plastic, Standard
  - D = Stainless Steel Bob
  - S = Plastic Spike Weight
  - LP = Low Density Plastic Weight
  - LS = Low Density Stainless Steel Weight
  - PB = PVC jacketed Bob (See Note 1)

- **Output:**
  - MODBUS, 4-20mA
  - MODBUS

- **Modem**
  - M = Modem (See Note 3)
  - N = No Modem

- **Voltage:**
  - 1 = 115 VAC
  - 2 = 230 VAC

- **Heater**
  - N = Without Motor Heater
  - Y = With Motor Heater

**GP-4 & Mark-4 Yo-Yo®**

- LBY-4 = GP-4 (NEMA 4)
- LHY-7 = Mark-4 Yo-Yo® (NEMA 4/7/9 Explosion proof/Dust Ignition Proof) (See Note 4)

- **Note 1:** Specify monofilament cable
- **Note 2:** For operation below 32°F (0°C)
- **Note 3:** Maximum one modem allowed per system
- **Note 4:** UL approved to CSA standards

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**Remote Display/Prrogrammer**

- **Dimensions**

- **Power Requirements:**
  - GP-4: NEMA 4
  - Mark-4: NEMA 4/7/9

- **Communications**

- **Wiring Requirements:**
  - Belden® 9842, 4-wire, shielded cable recommended

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**How to Order**

**Design Level**

- **Cable:**
  - 1 = Braided Polyester
  - 2 = Monofilament (Max length 40 ft (12.19m)

- **Sensing Weight:**
  - F = Plastic, Standard
  - D = Stainless Steel Bob
  - S = Plastic Spike Weight
  - LP = Low Density Plastic Weight
  - LS = Low Density Stainless Steel Weight
  - PB = PVC jacketed Bob (See Note 1)

- **Output:**
  - MODBUS, 4-20mA
  - MODBUS

- **Modem**
  - M = Modem (See Note 3)
  - N = No Modem

- **Voltage:**
  - 1 = 115 VAC
  - 2 = 230 VAC

- **Heater**
  - N = Without Motor Heater
  - Y = With Motor Heater

**GP-4 & Mark-4 Yo-Yo®**

- LBY-4 = GP-4 (NEMA 4)
- LHY-7 = Mark-4 Yo-Yo® (NEMA 4/7/9 Explosion proof/Dust Ignition Proof) (See Note 4)

- **Note 1:** Specify monofilament cable
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