

JVSOL INDIA INC



Weighing Scale to PLC Interface

Industrial Weighing Solutions

Professional Load Cell Integration with Siemens S7 PLC

Load Cell Interface

Real-Time Weight
Transfer

Auto Send to PLC

System Overview

Professional Load Cell to PLC Integration

D400 DLC Load Cell Interface integrated with Siemens S7-1200 PLC for industrial weighing applications

 Load Cell Interface: RS-232/RS-485 serial communication with configurable baud rates (2400-115200)

 Real-Time Data Transfer: Automatic weight transmission to PLC memory blocks (DB1.DBD2 format)

 Professional HMI: Interface with light/dark themes and status monitoring

 Configuration Management: Save/Load settings with JSON-based configuration persistence

 Auto-Send Mode: Automatic weight data transmission with configurable intervals

Key Features & Capabilities

Enterprise-Grade Weighing Solution

- I. Multi-Threaded Architecture: Separate threads for serial communication and PLC data transfer
- II. Connection Health Monitoring: Automatic detection of connection failures with visual status indicators
- III. Scale Factor Configuration: Adjustable scaling (1x, 10x, 100x, 1000x) for different measurement units
- IV. Weight Data Parsing: Advanced regex-based weight extraction supporting multiple format patterns
- V. Theme Customization: Professional light and dark themes with gradient status indicators
- VI. System Logging: Comprehensive event logging with timestamp for debugging and auditing
- VII. Error Recovery: Automatic reconnection attempts with exponential backoff strategy



PLC Configuration

Siemens S7 Communication Setup

The screenshot displays the 'Weighing Scale to PLC Interface' software. The interface is divided into several sections:

- System Status:** Shows 'Load Cell Connection' and 'PLC Connection', both with green 'CONNECTED' indicators.
- PLC IP Address:** A section for configuring the PLC network settings, including IP Address (192.168.1.10), Rack (0), Slot (1), DB Number (1), and Start Byte (2). A 'Connect PLC' button is located below these fields.
- Data Transfer Control:** Includes an 'Auto Send to PLC' checkbox and a 'Send Weight to PLC' button. 'Save' and 'Load' buttons are also present.
- Current Weight Reading:** A large display showing '23645.0 kg'.
- System Log:** A log window showing a series of weight measurements and data transfer events, such as '[15:53:21] Weight: 23645.0 kg' and '[15:53:21] Sent 23645.0 kg to DB1.DB2'.

Four numbered callouts (1, 2, 3, 4) are overlaid on the interface, pointing to the 'System Status', 'PLC IP Address', 'Rack & Slot Config', and 'DB Number & Byte' sections respectively.

Key Features:

1. System Status: Dual status indicators showing Load Cell and PLC connection states with color-coded feedback
2. IP Address: Siemens S7 PLC network configuration (default: 192.168.1.10) for Ethernet communication
3. Rack & Slot: S7 communication parameters - Rack 0, Slot 1 for CPU module addressing
4. DB Configuration: Data block number (DB1) and start byte (2) for weight data storage location



Load Cell Configuration

Serial Communication Setup

The screenshot displays the 'Weighing Scale Interface' software window. The title bar reads 'Professional Weighing Scale to PLC Interface'. The main header shows 'Weighing Scale Interface' and 'D400 DLC -> Siemens S7-1200 PLC'. A user profile icon for 'CLIENT' is visible in the top right. The interface is divided into several sections:

- System Status:** Shows 'Weighing Scale: + CONNECTED' and 'PLC Connection: + CONNECTED' with green status bars.
- Scale Config / PLC Config:** Contains configuration fields:
 - COM Port:** Set to 'COM9'. A callout '2' points to this field, and a callout '3' points to the 'Refresh' button.
 - Baud Rate:** Set to '2400'. A callout '4' points to this field.
 - Scale Factor:** Set to '1 (no scaling)'. A callout '5' points to this field.
- Data Transfer Control:** Includes a checkbox for 'Auto Send to PLC' and a 'Send Weight to PLC' button.
- Current Weight Reading:** A large blue box displays '31585.0 kg' with 'Last update: 12:19:09' below it.
- System Log:** A scrollable log window with a 'Clear Log' button. It contains the following entries:

```
[15:53:21] Weight: 23645.0 kg
[15:53:21] ✓ Sent 23645.0 kg to DB1.DBD2
[15:53:23] Weight: 45.00 kg
[15:53:23] ✓ Sent 45.0 kg to DB1.DBD2
[15:53:23] Weight: 23645.0 kg
[15:53:23] ✓ Sent 23645.0 kg to DB1.DBD2
[15:53:25] Weight: 45.00 kg
[15:53:25] ✓ Sent 45.0 kg to DB1.DBD2
[15:53:25] Weight: 23645.0 kg
[15:53:25] ✓ Sent 23645.0 kg to DB1.DBD2
[15:53:27] Weight: 45.00 kg
[15:53:27] ✓ Sent 45.0 kg to DB1.DBD2
[15:53:27] Weight: 23645.0 kg
[15:53:27] ✓ Sent 23645.0 kg to DB1.DBD2
```

Key Features:

1. Dual Status Display: Independent monitoring of weighing scale and PLC connectivity
2. COM Port: USB-to-Serial converter detection with refresh capability (COM9 - Prolific adapter)
3. Baud Rate: Configurable serial speed at 2400 bps for D400 DLC load cell communication
4. Scale Factor: Weight multiplier setting (1 = no scaling) for unit conversion and calibration

Real-Time Monitoring

Weight Display & System Logging

The screenshot displays the 'Weighing Scale to PLC Interface' software. The interface is divided into several sections:

- System Status:** Shows 'Load Cell Connection' and 'PLC Connection' both as 'CONNECTED' with green status bars.
- Current Weight Reading:** A large blue box displays '31585.0 kg' in a large font. A timestamp 'Last update: 12:19:08' is visible below the reading.
- Configuration:** Fields for 'IP Address' (192.168.1.10), 'Rack' (0), 'Slot' (1), 'DB Number' (1), and 'Start Byte' (2) are present. A 'PLC Config' button is located below these fields.
- Auto-Send Control:** A checkbox labeled 'Auto Send to PLC' is checked. Below it is a 'Send Weight to PLC' button.
- System Event Log:** A 'Clear Log' button is at the top. The log contains a list of events with timestamps and details, such as '[15:53:21] Weight: 23645.0 kg' and '[15:53:21] Sent 23645.0 kg to DB1.DB2'.
- Data Transfer Control:** Includes 'Save' and 'Load' buttons.

Annotations on the screenshot include:

- '1' pointing to the weight display.
- '2' pointing to the 'Auto-Send Control' checkbox.
- '3' pointing to the 'Save/Load Settings to PLC' button.
- '4' pointing to a log entry.

Key Features:

1. **Weight Display:** Large 96pt font showing current weight reading (31585.0 kg) with last update timestamp
2. **Auto Send Toggle:** Checkbox to enable automatic weight transmission to PLC at regular intervals
3. **Configuration Persistence:** Save current settings to JSON file or load previous configurations
4. **Event Log:** Real-time logging of weight readings, PLC transmissions, and system events with timestamps



Data Transfer Control

Manual & Automatic Weight Transmission

The screenshot displays the 'Weighing Scale to PLC Interface' software. The interface is divided into several sections:

- System Status:** Shows 'Load Cell Connection' and 'PLC Connection' both as '+ CONNECTED'. A 'Current Weight' display shows '23645.0 kg' with a gradient background. A 'Light Theme' button and a 'CLIENT' profile icon are visible in the top right.
- Data Transfer Control:** Includes a 'COM Port' dropdown set to 'COM8', a 'Baud Rate' of '2400', and a 'Scale Factor' of '1 (no scaling)'. There are buttons for 'Refresh', 'Disconnect Device', 'Auto Send Mode', and 'Manual Send'. A 'Transfer Log' button is also present.
- System Log:** A 'Clear Log' button is at the top. The log contains a list of events with timestamps, weights, and confirmation messages (e.g., 'Sent 23645.0 kg to DB1.DBD2').

Numbered callouts (1-4) highlight key features: 1 points to the current weight reading, 2 points to the 'Auto Send Mode' checkbox, 3 points to the 'Manual Send' button, and 4 points to the 'Clear Log' button.

Weight: 23645.0 kg | Updated: 15:53:27

Key Features:

1. Weight Reading: Real-time display of current scale measurement (23645.0 kg) with gradient background
2. Auto Send Checkbox: Enable continuous automatic weight data transfer to PLC without manual intervention
3. Manual Controls: Send Weight to PLC button for on-demand data transmission and Save/Load configuration
4. Activity Log: Detailed event history showing weight readings and successful PLC data transfers with checkmarks

Technical Specifications

System Requirements & Performance

- I. Load Cell Interface: D400 DLC with RS-232/RS-485 serial communication
- II. PLC Platform: Siemens S7-1200/1500 series via SNAP7 library
- III. Communication: Serial (2400-115200 baud) + Ethernet TCP/IP
- IV. Data Format: IEEE 754 floating-point (32-bit) stored in DB1.DBD2
- V. Update Rate: 500ms serial polling, 1000ms PLC health check
- VI. Weight Capacity: Supports up to 100,000 kg with decimal precision
- VII. Theme Support: Professional light and dark UI themes with gradient effects



User Interface & Workflow

Professional HMI Design

- I. Tabbed Configuration: Separate tabs for Load Cell Config and PLC Config for organized setup
- II. Status Indicators: Color-coded connection status (Green=Connected, Red=Disconnected, Orange=Connecting)
- III. Large Weight Display: 96pt font with gradient background and blue accent for visibility
- IV. Theme Toggle: Light/Dark theme switch button in top-right corner for operator preference
- V. Refresh COM Ports: Dynamic detection of available serial ports with one-click refresh
- VI. System Log: Scrollable event log with monospace font for technical debugging
- VII. Professional Styling: Rounded corners, gradients, and modern flat design following Material principles



Benefits & Applications

Why Choose This Solution

-  Accuracy: Direct load cell integration eliminates manual data entry errors
-  Efficiency: Automatic weight transfer reduces operator workload and cycle time
-  Reliability: Multi-threaded architecture with automatic reconnection ensures uptime
-  Traceability: Comprehensive logging provides audit trail for quality compliance
-  Flexibility: Configurable scale factors and data blocks adapt to different applications

Applications: Batching systems, truck scales, inventory management, production monitoring

Industries: Manufacturing, logistics, food processing, chemical processing, mining

Ready to Optimize Your Weighing Process?

Our Weighing Scale to PLC Interface delivers accurate, reliable weight data integration for your industrial automation needs.

THANKYOU

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