



杰 · 曼 · 科 · 技

G-2301P

Weigher Packaging

Communication Manual

110615020002

V01.00.01

1. Serial port connection

1.1 Serial Port

RXD/A	During RS232 communication, the RXD interface terminal. When using RS485 communication, the A terminal interface	1) RS232 and RS485 modes are pre-determined at the factory; arbitrary adjustments are not permitted. 2) In RS232 mode, GND must be connected; otherwise, normal communication cannot be achieved. 3) In RS485 mode, GND serves as the signal ground. In environments with significant interference, using low-resistance wires to connect the signal ground ensures equal ground potential across all nodes, significantly improving communication quality.
TXD/B	During RS232 communication, the TXD interface terminal. When using RS485 communication, the B terminal interface	
GND	Communication port grounding terminal	

2. Ethernet port connection

The **G-2301P** product supports single and dual network port communication.

- 1) LAN1 supports** network communication, while **LAN2** is currently disabled.

- 2) Optional dual network ports with built-in switch for easy cascading, supporting MD._RTU (Modbus-RTU) and TT protocols.

2.1 Troubleshooting Network Port Issues

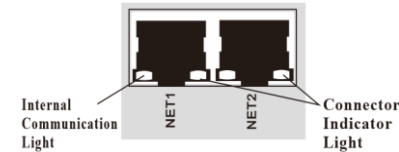
If the network port cannot communicate, please check:

- Check the network port indicator lights.

Hardware connection is normal, and the internal communication light on the instrument remains constantly on.

The network cable is connected properly, and the connection light is blinking.

- Check whether the communication protocol is consistent with the host computer and PLC.
- Confirm that the G-2301P can be pinged over the network. If not, check the hardware interface section.
- Check for any IP address conflicts.
- Restart the instrument.



3. Serial port firmware testing

Serial port testing function sends and receives data at a fixed baud rate (38400) and data format (8-N-1) to check the serial port connection status. After properly connecting the instrument to the host computer according to the instructions, the serial port test can be performed.

1) Test transmission: Enter parameter 7.5.3, with the sub-display showing "SEND". Press the "MENU" key to make "SEND" blink; press "MENU" again, and after 2 seconds the display will show "OK", then return to "SEND" and start transmitting data. If the host computer receives the following display, the serial port transmission is functioning normally.

2) Reception Test: Enter parameter 7.5.4, press the "MENU" key until "Receive" starts blinking, then press "MENU" again. After displaying "OK" for 2 seconds, "-----" will appear. At this point, send the HEX data "40 30 31 32 33 34 35 0D 0A" to the instrument externally. If the instrument displays as shown in the figure below, the serial port connection is normal.

4. Communication Parameters

Number	Parameter name	Initial value	Instructions
2.1 rS —> Serial port parameters			
2.1.1	Slaver number	1	Slaver number; range: 1-99
2.1.2	Baud rate	38400	Serial communication baud rate: 9600, 19200, 38400, 57600, 115200 (selectable)
2.1.3	Communication method	MD._RTU	Serial communication protocol options: MD._RTU (Modbus-RTU), PRINT, and tt protocol available
2.1.4	Data format	8-E-1	0. 8N1 1. 8E1 2. 8O1 3. 7E1 4. 7O1

2.1.5	Double-byte mode	AB-CD	0. AB-CD, 1. CD-AB
2.1.6	Transmission interval	20	Under the TT protocol, the interval time for continuous data transmission can be set from 10 to 999,999 ms.
2.1.7	TT protocol checksum switch	ON	TT protocol checksum bit switch: ON: Enabled (required); OFF: Disabled (not required)
2.2 NP —> Network Port Common Parameters			
2.2.1	Instrument IP high segment	192.168	IP high segment. Range: 0.0 to 255.255
2.2.2	Instrument IP low segment	0.1	IP low segment. Range: 0.0 to 255.255
2.2.3	Subnet mask high segment	255.255	Subnet mask high segment. Range: 0.0 to 255.255
2.2.4	Subnet mask lower segment	255.0	Subnet mask low segment. Range: 0.0 to 255.255
2.3 N1 —> Network Port - Socket 1 Parameters			
2.3.1	Port number	502	Ethernet communication port number; range: 0-65535, configurable
2.3.2	Communication methods	MD._TCP	Network communication protocol options: MD._RTU (Modbus-RTU), TT protocol optional
2.3.3	Double-byte mode	AB-CD	MODBUS communication byte order: AB-CD, CD-AB
2.3.4	Transmission	20	Under the TT protocol, the interval time for continuous data

	interval		transmission can be set from 10 to 999,999 ms.
2.4 N2 —> Network port - socket 2 parameters			
2.4.1	Port number	0	Ethernet communication port number; range: 0-65535, configurable
2.4.2	Communication methods	MD._TCP	Network communication protocol options: MD._RTU (Modbus-RTU), TT protocol optional
2.4.3	Double-byte mode	AB-CD	MODBUS communication byte order: AB-CD, CD-AB
2.4.4	Transmission interval	20	Under the TT protocol, the interval time for continuous data transmission can be set from 10 to 999999 ms.
* The instrument has four built-in Socket network channels, each independent and non-interfering with the others (Socket3 and Socket4 parameters correspond to items 2.5 and 2.6; parameter details refer to item 2.4). * For communication format and address, please refer to the "Product Communication Manual."			
2.7 N2 —> Print Parameters			
2.7.1	Header line count	0	Print information line before content, editable (communication, host computer editing). Range: 0-4
2.7.2	Tail line count	0	Print completion information line, content can be edited (communication, host computer editing). Range: 0-4
2.7.3	Auto Print Switch	OFF	Does the scale automatically print after packaging is completed?
2.7.4	Print format	24	Print width: 24: 24-column format; 32: 32-column format
2.7.5	Print language	CHN	Print language: CHN: Chinese; ENG: English
2.7.6	Print feed paper	3	After printing, the paper automatically advances downward to leave

	lines		the specified number of blank lines; range: 0–9 lines
2.7.7	Additional information print interval	0	Additional information refers to the header and footer content; the interval number indicates how many print operations occur between the header and footer. For example, if set to 3, the footer information will be printed after every three print operations.

5. Protocol Description

5.1 Modbus Protocol

5.1.1 Function Code and Error Code Description

Function code supported by the instrument

Function code	Name	Instructions
03	Read register	Maximum of 125 registers can be read at a time
06	Write to a single register	
16	Write multiple registers	This instrument command only supports writing to two registers at once; when writing, the address must be aligned, and partial writes to a pair of registers are not allowed. However, reading a portion of the two registers is permitted.
01	Read coil	Note that this length is measured in bits.

05	Write coil	
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Note: This instrument supports only the above **MODBUS** function codes; it will not respond to any other function codes sent to it.

Error code response

Code	Name	meaning
02	Invalid data address	For this instrument, this error code indicates that the received data address is an invalid address.
03	Invalid data value	The data written is outside the allowed range.
04	Slave machine failure	An unrecoverable error occurred while the instrument was attempting to perform the requested operation.
07	Unsuccessful programming request	The command received by the instrument cannot be executed under the current conditions.

5.1.2 Transmission Mode

RTU mode

- (1) When using **RTU** mode for communication, each **8-bit (1-byte)** segment of the data is transmitted as two **4-bit hexadecimal** characters.
- (2) The end of a frame must be indicated by an interval exceeding **3.5** characters. For more reliable termination, it is recommended to use an interval of **4.0** characters or more.

The specific agreement for this method is as follows:

Supported data format: **8** data bits, **1** stop bit, even parity (**8-E-1**)

8 data bits, **1** stop bit, odd parity (**8-O-1**)

8 data bits, **1** stop bit, no parity (**8-N-1**)

Code: Binary

ASCII mode

When using **ASCII** mode for communication, each **8-bit** segment (**1** byte) of a message is transmitted as two **ASCII** characters.

The specific agreement for this method is as follows:

Supported data format: **8** data bits, **1** stop bit, even parity (**8-E-1**)

8 data bits, **1** stop bit, odd parity (**8-O-1**)

8 data bits, **1** stop bit, no parity (**8-N-1**)

Code: **ASCII** code

5.1.3 Modbus Communication Address Sheet

PLC address	Protocol Address	Parameter Name	Parameter Description
Weight and status parameters (readable parameters)			
4x00001-4x00002	0-1	Display weight, with sign and integer formatting	

4x00003	2	Weight status bit	D12-15: Reserve
			D11: Current weight is the theoretical value
			D10: ADC failure
			D9: Currently net weight
			D8: Loadcell negative overflow
			D7: Loadcell positive overflow
			D6: Weight negative overflow
			D5: Weight positive overflow
			D4: Overflow status
			D3: Weight is negative
			D2: Zero Point
			D1: Mv value unstable
			D0: Unstable weight
4x00004	3	Reserve	
4x00005-4x00006	4-5	Gross weight, signed number, integer	
4x00007-4x00008	6-7	Net weight, signed number, integer	
4x00009-4x00010	8-9	Tare weight, signed number, integer	
4x00011-4x00012	10-11	displayed weight, signed, floating-point type	
4x00013-4x00014	12-13	gross weight, signed, floating-point type	

4x00015-4x00016	14-15	tare weight, signed, floating-point type	
4x00017-4x00018	16-17	net weight, signed, floating-point type	
4x00019-4x00020	18-19	loadcell voltage, four decimal point; floating-point type	
4x00021-4x00022	20-21	umber relative to zero voltage, four decimal point; floating-point type	
4x00023-4x00024	22-23	DA1 output value, signed integer	
4x00025-4x00026	24-25	DA2 output value, signed integer	
4x00027~4x00028	26-27	Reserve	
4x00029	28	Error Code 1	D15: Printing protocol not selected; printing prohibited
			D14: Division value setting exceeds precision
			D13: Calibration Lock
			D12: Calibration unstable, waiting for stabilization
			D11: Remote calibration performed when remote calibration is disabled
			D10: Previous weight point not calibrated
			D09: Exceeds minimum resolution (less than 0.1 μV per division)
			D08: Weight input exceeds maximum range
			D07: Weight input cannot be zero

			D06: Weight calibration value is less than zero point or previous calibration point
			D05: Loadcell positive overflow during weight calibration
			D04: Loadcell negative overflow during weight calibration
			D03: Unstable weight calibration
			D02: Loadcell positive overflow during zero-point calibration
			D01: Loadcell negative overflow during zero-point calibration
			D00: Zero-point calibration unstable
4x00030	29	Error Code 2	D06-D15: Reserve
			D05: Automatic weight correction coefficient out of range
			D04: Switch not turned on when automatically correcting weight coefficient
			D03: Result is less than or equal to 0, or weight change is too small when automatically adjusting the weight coefficient
			D02: Overflow occurs when automatically correcting the weight coefficient
			D01: Net weight is prohibited from automatic weight correction
			D00: Weight instability when automatically correcting weight coefficient
4x00031	30	Error Code 3	D15: Calibration error

			D14: Operation unstable, waiting for stabilization
			D13: Tare operation switch not turned on
			D12: Continuous taring is prohibited
			D11: Weight is negative when taring
			D10: Loadcell positive overflow during taring
			D09: Loadcell negative overflow during taring
			D08: Unstable during taring
			D07: Net weight status cannot be reset to zero
			D06: Reserve
			D05: Loadcell positive overflow during zeroing
			D04: Loadcell negative overflow during zeroing
			D03: Unstable during zeroing
			D02: Zero beyond range
			D01: Unstable during power-on zero
			D00: Power-on zero out of range
4x00032-4x00050	31-49	Reserve	
4x00051	50	Operating status	D15: The final package
			D14: Alarm
			D13: Batch completed

			D12: Pass
			D11: Under
			D10: Over
			D09: Zero Zone
			D08: Clamp bag
			D07: Discharge
			D06: Weigh OK
			D05: Wait
			D04: Slow Feed
			D03: Middle Feed
			D02: Fast Feed
			D01: Before feeding
			D00: 0: Stop; 1: Run
4x00052	51	Reserve	
4x00053	52	Control status	D07: Manual Completion
			D06: Manual Discharge
			D05: Manual Clear Material
			D04: Feeding Method 3
			D03: Feeding Method 2

			D02: Feeding Method 1
			D01: Feeding
			D00: Material Level
4x00054	53	Reserve	
4x00055	54	Feeding mechanism status	D03: Motor operation of feeding mechanism B
			D02: Motor A of the feeding mechanism rotates forward
			D01: Motor A of the feeding mechanism is running
			D00: Feeding mechanism A gate fully closed
4x00056	55	Clamp Bag mechanism status	D05: Bag clamping motor running forward
			D04: Clamping bag motor operation signal
			D03: Pat bag in place
			D02: Clamp Bag in place
			D01: Loose bag output
			D00: Clamp Bag output
4x00057	56	Discharge mechanism status	D05: Discharge direction signal
			D04: Discharge motor operation signal
			D03: Discharge gate closed in place
			D02: Discharge gate fully open
			D01: Discharge gate closing

			D00: Discharge gate open
4x00058	57	Reserve	
4x00059	58	Packaging error code (automatically cleared)	D12-15: Reserve
			D11: Target Error, Unable To Start, Start Disabled
			D10: Clear ACUM Before Run (if Parameter 3.1.15 is set “ON”)
			D09: Starting is not allowed during manual running
			D08: Data is being written, please wait...
			D07: Operation is not allowed during runtime
			D06: Over/Under Voltage Alarm
			D05: Stability timeout during zeroing
			D04: Zero out of range
			D03: Alarm for discharge gate not closed at startup
			D02: Alarm for feed gate not closed during startup
			D01: OFL at startup
			D00: Target value is 0 at startup or recipe parameters are unreasonable
4x00060	59	Reserve	
4x00061	60	Packaging error code (manually cleared)	D15:Tare Stabilization Timeout
			D14:Bag Release Timeout

			D13: Motor discharge gate opening timeout
			D12: Motor discharge gate closing timeout
			D11: Motor discharge gate detach limit alarm
			D10: Motor bag clamp timeout
			D09: Motor bag release timeout
			D08: Motor feed gate closing timeout
			D07: Weight overflow during packaging
			D06: Discharge timeout alarm
			D05: Feeding timeout alarm
			D04: Batch completed
			D03: Over/Under Pause
			D02: Waiting Stability timeout
			D01: Run Zero failed exceeds threshold
			D00: Supply Material timeout
4x00062	61	Packing Error Code	D00: Flowrate Low Alarm
4x00063	62	Status message	34-Waiting for Flow Control。
			33-Waiting for discharge blockage signal to be inactive。
			32-Waiting for Weight Below Half of Target Value。
			31-Wait For Loose Bag

			30-Tare After Weight Stabilized
			29-Wait for the feed gate to close.
			28- Wait for the batch to complete.
			27-Wait for the discharge gate to close completely.
			26- Discharge in progress, waiting for weight to decrease by ten percent
			25-Waiting for the Discharge delay complete
			24- Discharge in progress, waiting to return to the zero zone
			23- Wait for the discharge gate to open fully.
			22- Waiting for the discharge permission signal to become valid.
			21- Wait for clamp bag in place.
			20- Waiting for clamping bag.
			19-Currently supply material.
			18- Over/under pause; operation can continue after clearing alarm.
			17- Alarm output time for Over/Under.
			16- Perform over/under detection; weight must be stable.
			15- Alarm: waiting stabilization timeout.
			14- Wait for waiting timer to finish.

			13-Wait for the weight to stabilize to enter waiting status.
			12-Slow feeding is in progress.
			11- Middle feeding is in progress.
			10- Fast feeding is in progress.
			9- Waiting for the feed permit signal to become valid
			8- Alarm: supply material timeout or undefined material supply; empty material input is valid and can continue to run.
			7- Delay after supply material.
			6- Feeding is not allowed during material supply operation.
			5-Waiting for manual bag release
			4- Alarm: Continuous zeroing failure alarm
			3- Waiting for stable zero
			2- Delay before adding material
			1- in a stopped state, waiting to be started.
4x00064-4x00071	63-70	Reserve	
4x00073-4x00074	72-73	Total cumulative weight (low)	The system unit is “g”: Total = High part of total × 1,000,000 + Low part of total;
4x00075-4x00076	74-75	Total cumulative weight (high)	The system unit is “kg”: cumulative = cumulative high * 1000 + cumulative low / 1000;

			The system unit is “t”: Cumulative = Cumulative High + Cumulative Low / 1,000,000; The system unit is in “lb”: cumulative = cumulative high * 1000 + cumulative low / 1000.
4x00077-4x00078	76-77	Total cumulative feed count	
4x00079-4x00080	78-79	Reserve	
4x00081-4x00082	80-81	Current recipe cumulative weight (low)	Reference to total cumulative note
4x00083-4x00084	82-83	Current recipe cumulative weight (high)	
4x00085-4x00086	84-85	Current recipe cumulative feed count	
4x00087-4x00088	86-87	Reserve	
4x00089-4x00090	88-89	Total system cumulative weight (low)	Reference to total cumulative note
4x00091-4x00092	90-91	Total system cumulative weight (high)	
4x00093-4x00094	92-93	Total cumulative feed count in the system	
4x00095-4x00096	94-95	Remaining batch	
4x00097-4x00098	96-97	Net weigher multiple scales cumulative value.	
4x00099-4x00100	98-99	Net weigher multiple scales cumulative count.	
4x00101	100	Time before feeding	
4x00102	101	Feed time	
4x00103	102	Middle feed time	

4x00104	103	Slow feed time
4x00105	104	Waiting
4x00106	105	Discharge time
4x00107	106-107	Previous feed time
4x00109	108-109	Previous feed weight
4x00111-4x00112	110-111	Flow Unit (uint32)
4x00113-4x00114	112-113	Current Flow (float)
4x00115-4x00116	114-115	Current Speed (uint32)
4x00117-4x00118	116-117	Discharge Interval (uint32)
4x00119-4x00120	118-119	In&Out ACUM (float)
4x00121-4x00122	120-121	In&Outtotal Bag Count (uint32)
4x00123-4x00200	122-199	Reserve, readable, the read data is 0
Calibration parameters (readable and writable parameters)		
4x00201-4x00202	200-201	Unit: 0, g; 1, kg; 2, t; 3, lb; default: 0

4x00203-4x00204	202-203	Division: The current calibration accuracy limits the input of division values; the higher the calibration accuracy, the narrower the range of available division values.			
		0:50	6:0.1	12: 0.001	18: 0.0001
		1:20	7:0.2	13: 0.002	19: 0.0002
		2:10	8:0.5	14: 0.005	20: 0.0005
		3:5	9: 0.01	15: 0.010	21: 0.00001
		4:4	10: 0.02	16: 0.020	22: 0.00002
		5:1	11: 0.05	17: 0.050	23: 0.00005
4x00205-4x00206	204-205	Range: 1-999,999, default: 10,000			
4x00207-4x00208	206-207	Auto zero calibration: Data range: Only 1 can be written; both high and low bytes must be written simultaneously. When writing 1, the system automatically captures the loadcell voltage for zero-point calibration. During reading, it retrieves the current loadcell voltage.			
4x00209-4x00210	208-207	Gain calibration point: Write the weight value to calibrate at calibration point 1; both high and low bytes must be written simultaneously. When reading, obtain the relative voltage value 1 (loadcell input minus zero-point voltage during calibration of the first point).			
4x00211-4x00212	210-211	Weight correction coefficient: This coefficient is used to adjust the calibration. The input data is treated as an integer, and the system defaults to writing data with five decimal points. Range: 1–999,999; default: 100,000			

4x00213-4x00214	212-213	Automatic weight correction coefficient switch: When using remote operations such as Modbus, first turn on the switch to enable automatic adjustment of the weight correction coefficient. Write 1 to turn on the switch; write 0 to turn it off.
4x00215-4x00216	214-215	Auto-adjust variable weight: Turn on the automatic weight correction coefficient switch, then adjust the weight and input the increased or decreased weight value.
4x00232-4x00300	220-299	Reserve, readable, the read data is 0
Work Parameters - Weight Parameters (Readable and Writable Parameters)		
4x00301-4x00302	300-301	Stability judgment range; when the parameter is 0, the stability function is disabled and the weight stable flag remains active. When the parameter is not 0, during the stability judgment period, if the weight variation remains within or below the set division value, the weight is considered stable.
4x00303-4x00304	302-303	Stability judgment time: If within this period, the weight variation does not exceed the stability range, the weight is considered stable.
4x00305-4x00306	304-305	Zeroing range: Set the allowable zeroing range as a percentage of the maximum scale.
4x00307-4x00308	306-307	Zero tracking range: When the parameter is set to 0, the zero-tracking function is disabled. When the parameter is non-zero, if the weight change during the tracking period is less than the zero-tracking range, the system will automatically track the zero point.

4x00309-4x00310	308-309	Zero tracking time: During the zero-tracking period, if the weight change is less than the zero-tracking range, the system will automatically track the zero point.
4x00311-4x00312	310-311	A/D sampling rate: 0: 50 (Hz); 1: 60; 2: 100; 3: 120; 4: 200; 5: 240; 6: 400; 7: 480; 8: 800; 9: 960.
4x00313-4x00314	312-313	Signal range: 0, 0–5 mV; 1, 0–10 mV; 2, 0–15 mV
4x00315-4x00316	314-315	Power-on zeroing range: 0 means no zeroing; when non-zero, the zeroing range is expressed as a percentage of the full scale. Zeroing will not occur if the value exceeds this range, and an alarm will be triggered.
4x00317-4x00318	316-317	Stability judgment timeout duration: zero before feeding and during the hold process. If set to 0, it will hold indefinitely for stability; if non-zero, stability is considered failed once this time is exceeded.
4x00319-4x00320	318-319	Zero range: Set the allowable zeroing range as a percentage of the target value.
4x00321-4x00322	320-321	Working Mode (0- With Hopper; 1- Hopperless; 2- bulk scale)
4x00323-4x00324	322-323	Hopperless- G/N Packing: 0- Gross Packing; 1- Net Packing
4x00325-4x00326	324-323	Flowrate Calculation Window
4x00327-4x00328	326-327	Single Speed Mode
4x00329-4x00330	328-329	Stock mode; 0-Stock-Out; 1-Stock-IN
4x00331-4x00332	330-331	Manual Clear ACUM When Start
4x00333-4x00350	332-349	Reserve, readable, the read data is 0

Working Parameters - Filtering Parameters (Readable and Writable Parameters)			
4x00351-4x00352	350-351	Stop filter level: the intensity level of filtering in stop mode	
4x00353-4x00354	352-353	Steady-state filtering: 0 means the filter is disabled; when non-zero, the parameter defines the range of vibrations to be eliminated. For example, a parameter value of 7 indicates that vibrations around 7 divisions should be removed.	
4x00355-4x00356	354-355	Feed filtration level: Filtration parameters during feeding process	
4x00357-4x00358	356-357	Hold filtering level: Filtering parameters during the hold process	
4x00359-4x00360	358-359	Discharge filter level: Filter parameters during constant wait process	
4x00361-4x00400	360-399	Reserve, readable, the read data is 0	
Working Parameters - Feeding Mechanism (Readable and Writable Parameters)			
4x00401-4x00402	400-401	Feed delay / material shortage detection time	When the material level input is invalid, the material supply output becomes active after the "pre-supply delay." When the material loading level input becomes valid, the material supply output becomes inactive after the "post-supply delay." If the digital signal does not define the material level input, no material level judgment will be performed.
4x00403-4x00404	402-403	Material feeding delay / Material feeding time delay	
4x00405-4x00406	404-405	Full material start switch: When set to 1, the "material level" becomes invalid immediately upon startup, initiating material supply without waiting for the material level invalid time to exceed the "material shortage detection time."	

4x00407-4x00408	406-407	Material supply timeout: If the material level is not detected as valid within this time period after the material supply output becomes active, an alarm will be triggered.
4x00408-4x00450	408-449	Reserve, readable, the read data is 0
Working Parameters - Feeding Mechanism (Readable and Writable Parameters)		
4x00451-4x00452	450-451	Mechanism Type A: 0: None; 1: Pneumatic; 2: DA (1); 3: DA (2); 4: PWMS (feeding mechanism that controls feed gate size via PWM step drive); 5: PWMC (feeding mechanism that controls speed or feed rate via PWM frequency, such as belt or screw)
4x00453-4x00454	452-453	Mechanism Type B: 0: None; 1: None; 2: DA (1); 3: DA (2); 4: None; 5: PWMC (feeding mechanism controlled by PWM frequency to regulate speed or feed rate, such as belt or screw)
4x00455-4x00456	454-455	Timeout period for feed gate limit detection
4x00457-4x00458	456-457	Position signal type: 0: position reached when signal is active; 1: position reached when signal is invalid.
4x00459-4x00460	458-459	Feed motor frequency
4x00461-4x00462	460-461	Starting frequency: 0: one-third of the operating frequency.
4x00463-4x00464	462-463	Acceleration time: Acceleration time of the feeding motor.
4x00465-4x00466	464-465	Deceleration time: Deceleration time for the feeding motor. 0: Half of the acceleration time.
4x00467-4x00468	466-467	Power-on zero frequency: 0: one-third of the operating frequency.

4x00469-4x00500	468-499	Reserve, readable, the read data is 0
Working Parameters - Feeding Mechanism (Readable and Writable Parameters)		
4x00501-4x00502	500-501	Actuator type: 0: Pneumatic; 1: Standard motor forward/reverse; 2: Stepper motor forward/reverse
4x00503-4x00504	502-503	Clip/Loose bag debounce time.
4x00505-4x00506	504-505	Manual release bag switch: 1: On, when turn on, the bag will not automatically release after discharging; manual release is required before proceeding to the next weighing; 0: Off
4x00507-4x00508	506-507	Bag Clamp/Release Limit Detection Timeout
4x00509-4x00510	508-509	In place signal type: 0: In place when signal is active; 1: In place when signal is invalid.
4x00511-4x00512	510-511	Clamp bag motor frequency:
4x00513-4x00514	512-513	Starting frequency: 0: one-third of the running frequency.
4x00515-4x00516	514-515	Acceleration time: the acceleration time of the clamp bag motor.
4x00517-4x00518	516-517	Deceleration time: the deceleration time for the clamp bag motor. 0: half of the acceleration time.
4x00519-4x00520	518-519	Power-on zero frequency: 0: one-third of the running frequency.
4x00521-4x00550	520-549	Reserve, readable, the read data is 0
Working Parameters - Discharge Mechanism (Readable and Writable Parameters)		

4x00551-4x00552	550-551	Type of mechanism: 0: Pneumatic discharge, 1: Standard motor forward and reverse rotation, 2: Standard motor rotation, 3: Stepper motor forward and reverse rotation, 4: Stepper motor rotation
4x00553-4x00554	552-553	Manual discharge accumulation: 0: off, 1: on. Manual discharge will be counted into the accumulation once enabled.
4x00555-4x00556	554-555	Exit scale start condition: 0: Wait for the discharge gate to close before feeding. 1: Feed without waiting for the discharge gate to close.
4x00557-4x00558	556-557	In place signal type: 0, position reached when signal is valid; 1, position reached when signal is invalid
4x00559-4x00560	558-559	Limit real-time detection: 0: Off; 1: On.
4x00561-4x00562	560-561	Limit detection timeout period:
4x00563-4x00564	562-563	Motor frequency:
4x00565-4x00566	564-565	Starting frequency: 0: one-third of the running frequency.
4x00567-4x00568	566-567	Acceleration time: the acceleration time of the clamp bag motor.
4x00569-4x00570	568-569	Deceleration time: the deceleration time for the clamp bag motor. 0: half of the acceleration time.
4x00571-4x00572	570-571	Power-on zero frequency: 0: one-third of the running frequency.
4x00573-4x00600	572-599	Reserve, readable, the read data is 0
Recipe Parameters - Other Parameters (Readable and Writable)		

4x00603-4x00604	600-601	Recipe Number:
4x00605-4x00606	602-603	Target value: feeding target value.
4x00603-4x00604	604-605	Hopper Scale Mode:Total target value: Hopperless Scale Mode:Total In&Out ACUM
4x00606-4x00650	606-649	Reserve, readable, the read data is 0
Recipe Parameters - Pre-feeding Parameters (Readable and Writable Parameters)		
4x00651-4x00652	650-651	Pre-feeding delay: At the start of the feeding process, after this delay time, the instrument performs stability judgment and zeroing (if the zeroing interval conditions are not met, no stability judgment or zeroing will occur), then begins the feeding process.
4x00653-4x00654	652-653	First packet zeroing mode: 0: Do not zero on first run; 1: Zero the first packet on first run; 2: Zero the second packet on first run
4x00655-4x00656	654-655	Hopper Scale Mode:Auto zero interval Hopperless Scale Mode:Tare Refresh Interval Count
4x00657-4x00658	656-657	Number of consecutive zero failures before shutdown: 0 means only alarm without shutdown; non-zero indicates how many consecutive failed to zero-zeroing attempts are required to trigger a shutdown and alarm.
4x00658-4x00700	658-699	Reserve, readable, the read data is 0
Recipe Parameters - Feeding Parameters (Readable and Writable Parameters)		

4x00701-4x00702	700-701	Fast feed reserve: During the weighing process, if the weight value is $\geq$ target value - fast feed reserve, then stop fast feed.
4x00703-4x00704	702-703	Fast feed shortest time: Fast feed minimum running time
4x00705-4x00706	704-705	Middle feed reserve: During the weighing process, if the measured weight is $\geq$ target value - middle feed reserve, then stop the middle feed.
4x00707-4x00708	706-707	Middle feed shortest time: middle feed minimum running time
4x00709-4x00710	708-709	Slow feed reserve: During the weighing process, if the weight value is $\geq$ target value minus slow feed reserve, then turn off the slow feed.
4x00711-4x00712	710-711	Slow feed shortest time, slow feed minimum running time
4x00713-4x00714	712-713	Feed timeout duration: If the timeout duration is not zero and the feeding time exceeds the discharge timeout during the feeding process, an alarm will trigger and the machine will stop.
4x00715-4x00716	714-715	Fast feed output method: bit 111 corresponds to feed 1, feed 2, feed 3
4x00717-4x00718	716-717	Middle feed output method: bit 111 corresponds to feed 1, feed 2, feed 3
4x00719-4x00720	718-719	Slow feed output method: bit 111 corresponds to feed 1, feed 2, feed 3
4x00721-4x00722	720-721	Fast feed pulse count: negative pulses indicate motor reversal
4x00723-4x00724	722-723	Middle feed pulse count: negative pulse indicates motor reversal
4x00725-4x00726	724-725	Slow feed pulse count: negative pulses indicates motor reversal
4x00727-4x00728	726-727	A rotary motor fast feed frequency: used for fast feeding of the A rotary motor.

4x00729-4x00730	728-729	A rotary motor middle feed frequency: used for feeding material into the A rotary motor.
4x00731-4x00732	730-731	A rotary motor slow feed frequency: used for slow feeding of the A rotary motor
4x00733-4x00734	732-733	B rotary motor fast feed frequency: used for fast feeding of the B rotary motor
4x00735-4x00736	734-735	B rotary motor middle feed Frequency: used for middle feeding in B rotary motor
4x00737-4x00738	736-737	B rotary motor slow frequency increase: used for slow feeding with B rotary motor
4x00739-4x00740	738-739	Mechanism A fast material feeding analog signal: requires optional analog signal for vibration feeding
4x00741-4x00742	740-741	Mechanism A middle material feeding analog signal: requires optional analog signal for vibration feeding.
4x00743-4x00744	742-743	Mechanism A slow material feeding analog signal: requires optional analog signal for vibration feeding
4x00745-4x00746	744-745	Mechanism B fast material feeding analog signal: requires optional analog signal for vibration feeding
4x00747-4x00748	746-747	Mechanism B middle material feeding analog signal: requires optional analog signal for vibration feeding.
4x00749-4x00750	748-749	Mechanism B slow material feeding analog signal: requires optional analog signal for vibration feeding
4x00751-4x00800	750-799	Reserve, readable, the read data is 0
Recipe Parameters - Hold Parameters (Readable and Writable Parameters)		

4x00801-4x00802	800-801	hold weight hold: After the hold period ends, the displayed weight remains unchanged; once discharge begins, the weight starts to change again.
4x00803-4x00804	802-803	Stability judgment switch for hold: 1: Requires stability judgment before proceeding with the hold timing
4x00805-4x00806	804-805	Hold stability timeout alarm shutdown switch: 0: Disable hold stability timeout alarm, 1: hold stability timeout alarm
4x00807-4x00808	806-807	Hold time: 1: After the slow feeding is turned off, after this period of time, which the waiting ends, and the next process begins.
4x00809-4x00810	808-809	Free fall correction interval: 0 means drop correction is disabled; non-zero means free fall correction is performed at intervals specified by this parameter.
4x00811-4x00812	810-811	Free fall correction amplitude: expressed as a percentage of the target value
4x00813-4x00814	812-813	Free fall correction level: 0: 100% correction, 1: 50% correction, 2: 25% correction
4x00815-4x00850	814-849	Reserve, readable, the read data is 0
Recipe Parameters - Over/Under Parameters (Readable and Writable Parameters)		
4x00851-4x00852	850-851	Over/Under Deviation Detection Mode: 0: Disable over/under; 1: Pause alarm for over/under; 2: Continue running after alarm output time
4x00853-4x00854	852-853	Over: During the weighing process, if the measured weight is $\geq$ target value + over value, it is considered as over.
4x00855-4x00856	854-855	Under: During the weighing process, if the weighing value is $\leq$ target value - under value, it is judged as an under.

4x00857-4x00858	856-857	Over/under alarm output time:
4x00859-4x00860	858-859	Replenish material mode: 0: No replenish; 1: Pulse replenish material (slow feed when over occurs, with feed output based on number of feed cycles); 2: Time-based feed (slow feed when deficit occurs, with feed time calculated based on flow rate)
4x00861-4x00862	860-861	Replenish material maximum numbers: When the filling process is judged as under, slow feed will be performed according to this value.
4x00863-4x00864	862-863	Feed control time A: Jog replenish material—during the supply material output cycle, the slow feed valid time; replenish material by time—the minimum feed duration
4x00865-4x00866	864-865	Replenish material control time B: Pulse supply material—during the output of supplemental material, the slow feed is invalid within one on-off cycle. Time-based supplemental feeding—maximum supplemental feeding duration
4x00867-4x00900	866-899	Reserve, readable, the read data is 0
Recipe Parameters - Discharge Parameters (Readable and Writable Parameters)		
4x00901-4x00902	900-901	Zero zone value: 0 means weight is not considered; non-zero means discharge delay will occur only when the weight drops below the secondary zero zone.
4x00903-4x00904	902-903	Discharge delay: During the discharge process, when the scale hopper weight value falls below the zero zone value, this delay is activated; upon completion of the delay, the discharge signal is turned off.
4x00905-4x00906	904-905	Discharge timeout: If the parameter is non-zero, an alarm and shutdown will occur if the discharge time exceeds the discharge timeout during the discharge process.

4x00907-4x00908	906-907	Discharge cycles: Rotations to complete discharge under motor control (Valid only for motor/stepper discharge mode)
4x00909-4x00910	908-909	Discharge pulse count: a negative pulse indicates motor reversal
4x00911-4x00912	910-911	Discharge gate opening time(Fixed at 1.1 times the discharge opening time.)
4x00913-4x00950	912-949	Reserve, readable, the read data is 0
Recipe Parameters - Clamp/Loose bag Parameters (Readable and Writable Parameters)		
4x00951-4x00952	950-951	Clamping bag time: After the bag release signal is output, the meter judges the bag clamping action completed after this delay.
4x00953-4x00954	952-953	Loosening bag delay
4x00955-4x00956	954-955	Clamp bag pulse count: negative pulse indicates motor reversal
4x00957-4x00958	956-957	Hopperless Bag Release Timeout
4x00959-4x01000	958-1099	Reserve, readable, the read data is 0
Recipe Parameters - Target Flowrate (Readable and Writable Parameters)		
4x01001-4x01002	1000-1001	Target Flowrate
4x01003-4x01004	1002-1003	Flowrate Low Alarm Trigger Count

4x01005-4x01006	1004-1005	Auto Flow Adjustment Interval	
4x01007-4x01008	1006-1007	Flow adjustment upper limit in percent	
4x01009-4x01200	1008-1199	Reserve, readable, the read data is 0	
Cumulative And Batch (readable parameters)			
4x01201-4x01202	1200-1201	Total cumulative weight low byte	Read-only integer data. System unit is grams: Cumulative = cumulative high * 1000000 + cumulative low; The system unit is “kg”: cumulative = cumulative high * 1000 + cumulative low / 1000; The system unit is “t”: Cumulative = Cumulative High + Cumulative Low / 1,000,000; The system unit is “lb”: cumulative = cumulative high * 1000 + cumulative low / 1000.
4x01203-4x01204	1202-1203	Total cumulative weight high byte	
4x01205-4x01206	1204-1205	Total cumulative count (Read-only)	
4x01207-4x01208	1206-1207	Low cumulative weight of the recipe	Reference to total cumulative note
4x01209-4x01210	1208-1209	High cumulative weight of the recipe	

4x01211-4x01212	1210-1211	Recipe cumulative count (read-only)
4x01213-4x01214	1212-1213	Batch Setting
4x01215-4x01216	1214-1215	Batch completion mode: 0: Manual mode ;1: Automatic mode
4x01217-4x01218	1216-1217	Remaining batch count
4x00957-4x01500	956-1499	Reserve, readable, the read data is 0
Digital input/output parameters (readable and writable parameters)		
4x01501-4x01502	1500-1501	Input I1 function: Write function corresponds to the value. Read: Returns the current custom digital state
4x01503-4x01504	1502-1503	Input I1 debounce time:
4x01505-4x01506	1504-1505	I2 function: Write function corresponds to the value. Read: Returns the current custom digital state
4x01507-4x01508	1506-1507	Input I2 debounce time:
4x01509-4x01510	1508-1509	I3 function: Write function corresponds to a value. Read: Returns the current custom digital input status

4x01511-4x01512	1510-1511	Input I3 debounce time	
4x01513-4x01514	1512-1513	I4 function (including PWM): Write: Set the corresponding value. Read: Return the current custom digital state	
4x01515-4x01516	1514-1515	Input I4 debounce time:	
4x01517-4x01550	1516-1549	Reserve, readable, the read data is 0	
4x01551-4x01552	1550-1551	Output PWM-O1 function (including PWM)	Write function corresponds to a value. Read: Returns the current custom digital state
4x01553-4x01554	1552-1553	Output PWM-O2 function (including PWM)	
4x01555-4x01556	1554-1555	Output PWM-O3 function (including PWM)	
4x01557-4x01558	1556-1557	Output O1 function (without PWM)	
4x01559-4x01560	1558-1559	Output O2 function (without PWM)	
4x01561-4x01562	1560-1561	Output O3 function (without PWM)	
4x01563-4x01564	1562-1563	Optional output O4 function (without PWM)	

4x01565-4x01566	1564-1565	Optional output O5 function (without PWM)	
4x01567-4x01568	1566-1567	Optional output O6 function (without PWM)	
4x01569-4x01570	1568-1569	Optional output O7 function (without PWM)	
4x01571-4x01600	1570-1599	Reserve, readable, the read data is 0	
I/O testing (read and write parameters)			
4x01601	1600	IO test: write 1 to start testing, write 0 to stop	
4x01602	1601	I/O input I1 test	Write: 1. Input valid, 0 input invalid
4x01603	1602	I/O Input I2 Test	
4x01604	1603	I/O Input I3 Test	
4x01605	1604	PWM-I4 Input/Output Test	
4x01606	1605	PWM-O1 Output Test	Write : 1 for valid output, 0 for invalid output
4x01607	1606	PWM-O2 Output Test	
4x01608	1607	PWM-O3 Output Test	
4x01609	1608	IO Output O1 Test	
4x01610	1609	IO Output O2 Test	
4x01611	1610	IO Output O3 Test	

4x01612	1611	IO Output O4 Test
4x01613	1612	IO Output O5 Test
4x01614	1613	IO Output O6 Test
4x01615	1614	IO Output O7 Test
4x01026-4x01700	1616-1699	Reserve, readable, the read data is 0
Communication Parameters - Serial Port Parameters (Readable and Writable Parameters)		
4x01701-4x01702	1700-1701	Slaver number: Range: 1-99, default: 1.
4x01703-4x01704	1702-1703	Baud rate: 0, 9600; 1, 19200; 2, 38400; 3, 57600; 4, 115200
4x01705-4x01706	1704-1705	Communication Protocol: 0. MD._RTU, 1. PRINT, 2. TT Protocol
4x01707-4x01708	1706-1707	Data format: 0, 8N1; 1, 8E1; 2, 8O1; 3, 7E1; 4, 7O1
4x01709-4x01710	1708-1709	High and low bytes (valid in BUS mode): 0, AB-CD, 1, CD-AB
4x01711-4x01712	1710-1711	Continuous transmission interval:
4x01713-4x01714	1712-1713	TT protocol checksum switch

4x01713-4x01750	1712-1749	Reserve, readable, the read data is 0	
Communication Parameters - Network Port Parameters (Readable and Writable Parameters)			
4x01751	1750	Local IP-1	Each segment ranges from 000 to 255, default: 192.168.0.1
4x01753	1752	Local IP-2	
4x01755	1754	Local IP-3	
4x01757	1756	Local IP-4	
4x01759	1758	Subnet mask - 1	Each segment ranges from 000 to 255, default: 255.255.255.0
4x01761	1760	Subnet mask - 2	
4x01763	1762	Subnet mask - 3	
4x01765	1764	Subnet mask - 4	
4x01767	1766	Gateway-1	Each segment ranges from 000 to 255, default: 192.168.0.1
4x01769	1768	Gateway-2	
4x01771	1770	Gateway-3	
4x01773	1772	Gateway-4	
4x01775	1774	Port number for connection 1	
4x01777	1776	Communication mode 1: 0, Modbus/TCP; 1, TT protocol	
4x01779	1778	Connection 1 Dual-word mode: 0, AB-CD; 1, CD-AB	
4x01781	1780	Connection 1 transmission interval	

4x01783	1782	Connection 2 port number;
4x01785	1784	Communication mode 2: 0, Modbus/TCP; 1, TT protocol
4x01787	1786	Connection 2 dual-word mode: 0, AB-CD; 1, CD-AB
4x01789	1788	Connection 2 send interval
4x01791	1790	Connection 3 port number;
4x01793	1792	Communication mode 3: 0, Modbus/TCP; 1, TT protocol
4x01795	1794	Connection 3 dual-word mode: 0, AB-CD; 1, CD-AB
4x01797	1796	Connection 3 transmission interval:
4x01799	1798	Connection 4 port number:
4x01801	1800	Communication mode 4: 0, Modbus/TCP; 1, TT protocol
4x01803	1802	4-pair connection mode: 0, AB-CD; 1, CD-AB
4x01805	1804	Connection 4 transmission interval
4x01805	1806	TT protocol checksum switch; 0: off; 1: on
4x01807-4x01850	1806-1849	Reserve, readable, the read data is 0
Communication Parameters - Print Parameters (Readable and Writable Parameters)		
4x01851-4x01852	1850-1851	Number of lines in the header information
4x01853-4x01854	1852-1853	Number of header and footer lines

4x01855-4x01856	1854-1855	Auto print switch: 0 = off; 1 = on. When enabled, a print will be performed each time the filling wait is completed (requires serial port mode to be set to print mode).	
4x01857-4x01858	1856-1857	Print format: 0: 24-column print; 1: 32-column print	
4x01859-4x01860	1858-1859	Print language: 0: Chinese; 1: English	
4x01861-4x01862	1860-1861	Print line feed count: 0~9, default: 3	
4x01863-4x01864	1862-1863	Additional information print interval 0: Additional information is printed only for the first and last feed after startup (during pause or batch complete) 1: Additional information is printed after every completed packet. n: Additional information is printed for packets numbered 1, 1+n, 1+2n, ..., and the last feed. Additional information refers to customer-defined header/footer data, time and cumulative data, as well as target value. Main information refers to: whether the current weight result is qualified or not	
4x01865-4x01866	1864-1865	Characters 1-4 of the first line of header information	Character content for printed information (32 characters);
4x01867-4x01868	1866-1867	Characters 5-8 of the first line of header information	
4x01869-4x01870	1868-1869	Characters 9-12 of the first line of header information	

4x01871-4x01872	1870-1871	Characters 13-16 of the first line of header information	supports all printable ASCII codes, default: 0x2D2D (some ASCII codes may not be printable or displayable)
4x01873-4x01874	1872-1873	Characters 17-20 of the first line of header information	
4x01875-4x01876	1874-1875	Characters 21-24 of the first line of header information	
4x01877-4x01878	1876-1877	Characters 25-28 of the first line of header information	
4x01879-4x01880	1878-1879	Characters 29-32 of the first line of header information	
4x01881-4x01882	1880-1881	Characters 1-4 of the second line in the header information	
4x01883-4x01884	1882-1883	Characters 5-8 of the second line in the header information	
4x01885-4x01886	1884-1885	Characters 9-12 of the second line in the header information	
4x01887-4x01888	1886-1887	Characters 13-16 of the second line in the header information	
4x01889-4x01890	1888-1889	Characters 17-20 of the second line in the header information	
4x01891-4x01892	1890-1891	Characters 21-24 of the second line in the header information	

4x01893-4x01894	1892-1893	Characters 25-28 of the second line in the header information
4x01895-4x01896	1894-1895	Characters 29-32 of the second line in the header information
4x01897-4x01898	1896-1897	Characters 1-4 of the third line in the header information
4x01899-4x01900	1898-1899	Characters 5-8 of the third line in the header information
4x01901-4x01902	1900-1901	Characters 9-12 of the third line in the header information
4x01903-4x01904	1902-1903	Characters 13-16 of the third line in the header information
4x01905-4x01906	1904-1905	Characters 17-20 of the third line in the header information
4x01907-4x01908	1906-1907	Characters 21-24 of the third line in the header information
4x01909-4x01910	1908-1909	Characters 25-28 of the third line in the header information
4x01911-4x01912	1910-1911	Characters 29-32 of the third line in the header information
4x01913-4x01914	1912-1913	Characters 1-4 of line 4 in the header information

4x01915-4x01916	1914-1915	Characters 5-8 of line 4 in the header information
4x01917-4x01918	1916-1917	Characters 9-12 of line 4 the header information
4x01919-4x01920	1918-1919	Characters 13–16 of line 4 in the header information
4x01921-4x01922	1920-1921	Characters 17-20 of line 4 in the header information
4x01923-4x01924	1922-1923	Characters 21-24 of line 4 the header information
4x01925-4x01926	1924-1925	Characters 25-28 of line 4 the header information,
4x01927-4x01928	1926-1927	Characters 29-32 of line 4 the header information
4x01929-4x01930	1928-1929	Characters 1-4 of the first line of the tail information
4x01931-4x01932	1930-1931	Characters 5-8 of the first line in the footer
4x01933-4x01934	1932-1933	Characters 9-12 of the first line in the footer
4x01935-4x01936	1934-1935	Characters 13-16 of the first line in the footer

4x01937-4x01938	1936-1937	Characters 17-20 of the first line in the footer
4x01939-4x01940	1938-1939	Characters 21-24 of the first line in the footer
4x01941-4x01942	1940-1941	Characters 25-28 of the first line in the footer
4x01943-4x01944	1942-1943	Characters 29-32 of the first line in the footer
4x01945-4x01946	1944-1945	Characters 1-4 of line 2 in the footer
4x01947-4x01948	1946-1947	Characters 5-8 of line 2 in the footer
4x01949-4x01950	1948-1949	Characters 9-12 of line 2 in the footer
4x01951-4x01952	1950-1951	Characters 13-16 of line 2 in the footer
4x01953-4x01954	1952-1953	Characters 17-20 of line 2 in the footer
4x01955-4x01956	1954-1955	Characters 21-24 of line 2 in the footer
4x01957-4x01958	1956-1957	Characters 25-28 of line 2 in the footer

4x01959-4x01960	1958-1959	Characters 29-32 of line 2 in the footer
4x01961-4x01962	1960-1961	Characters 1-4 of line 3 in the footer
4x01963-4x01964	1962-1963	Characters 5-8 of line 3 in the footer
4x01965-4x01966	1964-1965	Characters 9-12 of line 3 in the footer
4x01967-4x01968	1966-1967	Characters 13-16 of line 3 in the footer
4x01969-4x01970	1968-1969	Characters 17-20 of line 3 in the footer
4x01971-4x01972	1970-1971	Characters 21-24 of line 3 in the footer
4x01973-4x01974	1972-1973	Characters 25-28 of line 3 in the footer
4x01975-4x01976	1974-1975	Characters 29-32 of line 3 in the footer
4x01977-4x01978	1976-1977	Characters 1-4 of line 4 in the footer
4x01979-4x01980	1978-1979	Characters 5-8 of line 4 in the footer

4x01981-4x01982	1980-1981	Characters 9-12 of line 4 in the footer
4x01983-4x01984	1982-1983	Characters 13-16 of line 4 in the footer
4x01985-4x01986	1984-1985	Characters 17-20 of line 4 in the footer
4x01987-4x01988	1986-1987	Characters 21-24 of line 4 in the footer
4x01989-4x01990	1988-1989	Characters 25-28 of line 4 in the footer
4x01991-4x01992	1990-1991	Characters 29-32 of line 4 in the footer
4x02007-4x02050	2006-2049	Reserve, readable, the read data is 0
RTC settings (read/write address)		
4x02051	2050	Time zone: range:-120 to 120(default:80); minimum interval can be set to 5, representing from UTC+12 to UTC-12, with an interval of 0.5 time zones.
4x02052	2051	Date format: 0-YY.MM.DD; 1-DD.MM.YY
4x02053	2052	Year: Range: <2099, Default: 2000
4x02054	2053	Month: Range: 1-12, Default: 1
4x02055	2054	Day: Range: 1-31, Default: 1

4x02056	2055	Hour: Range: 0-23, default: 0	
4x02057	2056	Minute: Range: 0-59, Default: 0	
4x02058	2057	Second: Range: 0-59, Default: 0	
4x02059-4x08000	2058-8999	Reserve, readable, the read data is 0	
Reset address (write address)			
4x08001	8000	Reset all parameters (including calibration)	Reset when written with 1, reads as 0.
4x08002	8001	Reset all parameters (excluding calibration)	
4x08003	8002	Reset weight calibration parameters	
4x08004	8003	Reset work parameters	
4x08005	8004	Reset recipe parameters	
4x08006	8005	Reset serial port parameters	
4x08007	8006	Reset network parameters	
4x08008	8007	Reset print parameters	
4x08009	8008	Reset IO definition	
4x08010-4x08050	8009-8049	Reserve, readable, the read data is 0	
LOGO (readable, writable parameters)			
4x08051	8050	Edit boot logo characters 1	

4x08052	8051	Edit boot logo characters 2	The first character of the startup logo, which needs to be written as an ASCII code, with a range of 0-9, a-z, A-Z, space, and '-'. Default: '2'
4x08053	8052	Edit boot logo characters 3	
4x08054	8053	Edit boot logo characters 4	
4x08055	8054	Edit boot logo characters 5	
4x08056	8055	Edit boot logo characters 6	
4x08057-4x08080	8056-8079	Reserve, readable, the read data is 0	
Function Operation (read and write parameters)			
4x08081	8080	Start: Write 1 to execute, return ON when running	
4x08082	8081	Emergency stop: Write 1 to execute, return ON when stopped	
4x08083	8082	Stop: Write 1 to execute, Stop status returns ON	
4x08084	8083	Zero: Write 1 to execute, zero-point status returns ON	
4x08085	8084	Clear alarm: Write 1 to execute, return ON in standby state	
4x08086	8085	Clamp bag: clamp bag function enabled returns ON	Write 1 to enable, write again to disable;
4x08087	8086	Manual fast feed: fast feed is valid when ON is returned	
4x08088	8087	Manual interlock: interlock active returns ON	
4x08089	8088	Manual slow feed: slow feed is valid when ON is returned	
4x08090	8089	Manual discharge: discharge is valid when ON is returned	
4x08091	8090	Manual clear material: when clearing is valid, return ON	

4x08092	8091	Manual completion: manual completion is valid and returns ON	
4x08093	8092	Manual feeding: feeding enabled returns ON	
4x08094	8093	Total print count: Write 1 execution	
4x08095	8094	Print current recipe cumulative: Write 1 to execute	
4x08096	8095	Print and feed: Write 1 to execute	
4x08097	8096	Clear total accumulation: write 1 to execute	
4x08098	8097	Clear current recipe accumulation: write 1 to execute	
4x08099	8098	Clear batch count accumulation: write 1 to execute	
4x08100	8099	Clear In&Out ACUM	
4x08101-4x08900	8100-8099	Reserve, readable, the read data is 0	
Product Information (Read-Only)			
4x10001-4x10002	10000-10001	Software Version	
4x10003-4x10004	10002-10003	Compilation Date	
4x10005-4x10017	10004-10016	Instrument serial number: 13 characters in total;	
4x10018-4x10029	10017-10028	Instrument product number; 12 characters in total	

4x10030	10029	DAC optional add-on board; 0: none, 1: AD5422, 2: TPC116S1-V, 3: TPC116S1-MA	
4x10031	10030	Ethernet port optional add-on board: 0: None, 1: Standard Ethernet port, 2: Profinet	
4x10032	10031	IO optional expansion board: 0: No IO expansion board, 1: With IO expansion board	
4x10033-4x10050	10032-10049	Reserve, readable, the read data is 0	
4x10051	10050	1st segment of MAC address (XX-00-00-00-00-00), default: BC	ach address represents one segment; 0x00–0xFF, non-ASCII
4x10052	10051	2st segment of MAC address (00 -XX -00-00-00-00), default: 66	
4x10053	10052	3st segment of MAC address (00 -00-XX -00-00-00), default: 41	
4x10054	10053	4st segment of MAC address (00 -00-00-XX -00-00), default: 90	
4x10055	10054	5st segment of MAC address (00 -00-00-XX -00-00), default: 00	
4x10056	10055	6st segment of MAC address (00 -00-00-XX -00-00), default: 00	
4x10057-4x10100	10056-10099	Reserve, readable, the read data is 0	
Coil operation (read, write)			
0x00001	0	Start; coil write ON executed, operation status returns ON	
0x00002	1	Emergency stop; coil write ON executed, return to ON in stop state	
0x00003	2	Stop; coil write ON executed, stop status returns ON	
0x00004	3	Reset; coil write ON executed, zero-point status returns ON	
0x00005	4	Clear alarm; coil write ON executed, return to ON in standby state	

0x00006	5	Clamp bag; clamp bag valid return ON	coil write ON to execute, write ON again to disable,
0x00007	6	Manual fast feed; fast feed valid returns ON	
0x00008	7	Manual middle feed; middle feed returns ON	
0x00009	8	Manual slow feed; slow feed valid returns ON	
0x00010	9	Manual discharge; Discharge becomes valid and returns ON	
0x00011	10	Manual clear material; clear material valid return ON	
0x00012	11	Manual completion; manual completion valid returns ON	
0x00013	12	Manual feeding; feeding enabled return ON	
0x00014	13	Print total accumulated; coil write ON executed	
0x00015	14	Print current recipe cumulative; coil write ON executed	
0x00016	15	Print and feed paper; coil write ON executed	
0x00017	16	Clear total accumulation; coil write ON execution	
0x00018	17	Clear current recipe accumulation; coil write ON execution	
0x00019	18	Clear batch count accumulation; coil write ON execution	
0x00020	19	Manual batch completion; coil write ON execution	
0x00021	20	Clear In&Out ACUM	
0x00021-0x00100	20-99	Reserve	
0x00101	100	Reset all parameters (including calibration)	Coil write ON performs
0x00102	101	Reset all parameters (excluding calibration)	

0x00103	102	Reset weight calibration parameters	reset (write address)
0x00104	103	Reset work parameters	
0x00105	104	Reset recipe parameters	
0x00106	105	Reset serial port parameters	
0x00107	106	Reset network parameters	
0x00108	107	Reset print parameters	
0x00109	108	Reset io definition	
0x00111-0x00200	110-199	Reserve	
0x00201	200	Input I1 status	Return ON for valid input state (<u>read-only address</u>)
0x00202	201	Input I2 status	
0x00203	202	Input I3 status	
0x00204	203	Input PWM-I1 status	
0x00205-0x00250	204-249	Reserve	
0x00251	250	Output PWM-O1 status	Return ON for valid output status (<u>read-only address</u>)
0x00252	251	Output PWM-O2 status	
0x00253	252	Output PWM-O3 status	
0x00254	253	Output O1 status	
0x00255	254	Output O2 status	
0x00256	255	Output O3 status	

0x00257	256	Output O4 status
0x00258	257	Output O5 status
0x00259	258	Output O6 status
0x00260	259	Output O7 status
0x00259	258	Output O6 status
0x00260	259	Output O7 status
0x00257-0x00300	260-299	Reserve

5.2 Toledo Protocol

Select the "tt" protocol in work parameter **F2.3**, and the instrument will continuously transmit data using the Toledo protocol.

The Toledo continuous transmission format is as follows:

STX	A	B	C	Display weight	Reserve	CR	Check Code
-----	---	---	---	----------------	---------	----	------------

where:

STX Start of Text — 02H

Status word **A** is defined as follows:

D0	0	1	0	1	0	1
D1	1	1	0	0	1	1
D2	0	0	1	1	1	1
Decimal point	x	.x	.xx	.xxx	.xxxx	.xxxxx

D3, D4, and D6 are 0 (unchanged); **D5 is 1** (unchanged).

Status word **B** is defined as follows:

D6	D6	D5	D4	D3	D2	D1	D0
	Instrument status		Unit	Stable	Overflow	Symbol	Gross weight
Fixed 0	Fixed 0	Fixed 1	1-lb;0-kg (Invalid when other units are used)	1-Unstable 0 - Stable	1-Overflow 0 - Normal	1-Negative 0 - Positive	0 - Gross weight; 1- Net weight;

Status word **C** is defined as follows (currently no corresponding function):

D0	0	1	0	1	0	1	0	1
D1	0	0	1	1	0	0	1	1
D2	0	0	0	0	1	1	1	1
Instructions	lb or kg, determined by bit D4 of status word B	gram (g)	metric ton (t)	Ounce (oz)	Troy ounce (ozt)	Benny Witt (dwt)	ton	Custom unit
The remaining bits D3 to D7 are fixed at 0.								

Display weight—**6** bits, without symbols or decimal point. Leading zeros are replaced with spaces;

Reserved—**6** bits, all set to **30H**;

CR—1 bit, value is **0DH**;

Checksum—used to detect errors in transmitted data. For specific calculation details, refer to the CRC

calculation instructions.

5.3 PROFINET Communication

The device has two PROFINET-IO bus connection ports, Port1 and Port2, which can be connected to the PROFINET network as a PROFINET-IO slave.

The instrument's IP address can be set and viewed in communication parameter 2.3; the MAC address is factory-applied on the instrument and can also be checked via address 10050-10055.

5.3.1 I/O Status

The G-2301P provides 50-byte input and 16-byte output cyclic parameters, allowing the master station to read and control the status of the weighing display via these I/Os. Non-cyclic parameters can be read or written using the cyclic parameters according to Modbus addresses.

PN Cycle Parameter List

Offset	Parameter Name	Data types	Parameter Description
0	The value read out	DWord	The master station requests data from the instrument and retrieves the value based on the "address to be read."
4	Display weight value	DWord	The currently displayed weight is in integer/float format (depending on the data type of the PN parameter on the instrument), with the default display being the integer value.

8	Gross weight	DWord	The current gross weight is displayed as an integer or floating-point value (depending on the data type of the PN parameter on the instrument), with the default being integer display.
12	Net weight	DWord	The current net reconditioned/net weight floating-point type (depending on the data type of the PN parameter on the instrument), with integer values displayed by default.
16	Loadcell voltage	Real	Current loadcell voltage, floating point type
20	Analog signal	DWord	Current analog value, integer.
24	Status flag	Word	D12-15: Communication heartbeat
			D11: Current weight is the theoretical value
			D10: ADC failure
			D09: Current net weight
			D08: Loadcell negative overflow, below the allowable voltage range of the loadcell
			D07: Loadcell overflows, exceeding the allowable voltage range of the loadcell
			D06: Weight negative overflow, weight is less than "-(maximum range + 9d)"

			D05: Weight positive overflow, weight exceeds "maximum capacity + 9d"
			D04: Overflow status
			D03: Display weight negative sign (display weight as a negative number)
			D02: Zero Point
			D01: Millivolt value unstable (bit indicating stability of millivolt reading during calibration)
			D00: Unstable weight
26	Error Code 1	Word	D15: Printing protocol not selected; printing prohibited
			D14: Division value setting exceeds precision
			D13: Calibration Lock
			D12: Calibration unstable, waiting for stabilization
			D11: Remote calibration performed when remote calibration is disabled
			D10: Previous weight point not calibrated
			D09: Exceeds minimum resolution (less than 0.1 μ V per division)
			D08: Weight input exceeds maximum range
			D07: Weight input cannot be zero

			D06: Weight calibration value is less than zero point or previous calibration point D05: Loadcell positive overflow during weight calibration D04: Loadcell negative overflow during weight calibration D03: Unstable weight calibration D02: Loadcell positive overflow during zero-point calibration D01: Loadcell negative overflow during zero-point calibration D00: Zero-point calibration unstable
28	Error Code 2	Word	D05-15: Reserve D04: Switch not turned on when automatically correcting weight coefficient D03: Result is less than or equal to 0 when automatically adjusting the weight coefficient D02: Overflow occurs when automatically correcting the weight coefficient D01: Net weight is prohibited from automatic weight correction D00: Weight instability when automatically correcting weight coefficient
30	Error Code 3	Word	D15: Calibration error

			D14: Running unstable, waiting for stabilization
			D13: Tare operation switch not turned on
			D12: Continuous tare is prohibited
			D11: Weight is negative when taring
			D10: Loadcell positive overflow during taring
			D09: Loadcell negative overflow during taring
			D08: Unstable during taring
			D07: Net weight status cannot be reset to zero
			D06: Reserve
			D05: Loadcell positive overflow during zeroing
			D04: Loadcell negative overflow during zeroing
			D03: Unstable during zeroing
			D02: Zero beyond range
			D01: Unstable during power-on zero
			D00: Power-on zero out of range
32	Operating status	Word	D15: Final scale
			D14: Alarm
			D13: Batch completed
			D12: Qualified

			D11: Under
			D10: Over
			D09: Zero Zone
			D08: Bag Clamping
			D07: Discharging
			D06: Weigh OK
			D05: Waiting
			D04: Slow feed
			D03: Middle feed
			D02: Fast feed
			D01: Before feeding
			D00: 0: Stop; 1: Run
34	Control status	Word	D08-15: Reserve
			D07: Manual completion
			D06: Manual discharge
			D05: Manual clear material
			D04: Feeding Method 3
			D03: Feeding Method 2
			D02: Feeding Method 1

			D01: Feeding
			D00: Material Level
36	Packaging error code (automatically cleared)	Word	D12-15: Reserve
			D11: Target Error, Unable To Start, Start Disabled
			D10: Clear ACUM Before Run (When Parameter 3.1.15 is set “ON”)
			D09: Starting is not allowed during manual operation
			D08: Data is being written, please wait...
			D07: Operation is not allowed during runtime
			D06: Over/Under Voltage Alarm
			D05: Stability timeout during zeroing operation
			D04: Zero out of range when running
			D03: Alarm for discharge gate not closed at startup
			D02: Alarm for feed gate not closed during startup
			D01: OFL at startup
			D00: Target value is 0 at startup or recipe parameters are unreasonable
38	Packaging error code	Word	D15: Tare Stabilization Timeout
			D14: Bag Release Timeout
			D13: Motor discharge gate opening timeout

	(manually cleared)		D12: Motor discharge gate closing timeout
			D11: Motor discharge gate leave limit alarm
			D10: Motor bag clamping timeout
			D09: Motor bag release timeout
			D08: Motor feed gate closing timeout
			D07: Weight overflow during feeding
			D06: Discharge timeout alarm
			D05: Feeding timeout alarm
			D04: Batch completed
			D03: Over/Under Pause
			D02: Waiting stability timeout
			D01: Run zero failed exceeds threshold
			D00: Material feeding timeout
40	Status message	Word	34-Waiting for Flow Control。
			33-Waiting for discharge blockage signal to be inactive。
			32-Waiting for Weight Below Half of Target Value。
			31-Wait For Loose Bag
			30-Tare After Weight Stabilized
			29- Wait for the feed gate to close.

		28-Waiting for the batch to complete.
		27-Wait for the discharge gate to close completely.
		26-Discharge in progress, waiting for weight to decrease by ten percent
		25-Waiting for the discharge delay to end
		24- Discharge in progress, waiting to return to the zero zone
		23- Wait for the discharge gate to open fully.
		22- Waiting for the discharge permission signal to become valid.
		21-Wait for clamp bag in place.
		20-Waiting for bag clamping.
		19- Currently replenish material.
		18- Over/Under pause
		17- Alarm output time for over/under.
		16-Perform over/under detection; weight must be stable.
		15-Alarm: Hold judge stable timeout.
		14- Wait for wait time to finish.
		13-Wait for the weight to stabilize when in hold status.
		12- Slow feeding.
		11- Middle feeding.

			10-Fast feeding.
			9-Waiting for the feed permit signal to be valid
			8-Alarm: Material supply timeout or undefined material supply;
			7-Delay after material supply
			6-Feeding is not allowed during material supply operation.
			5-Waiting for manual bag release
			4-Alarm: Continuous zeroing failure alarm
			3- Waiting for stable to zero
			2- Delay before feeding
			1- The equipment is in a stopped state, waiting to be started.
42	The previous feeding time	DWord	The packaging time of the previous item, in milliseconds.
46	Previous package weight	DWord	Previous bag weight as integer/previous bag weight as floating point (depending on the data type of the PN parameter on the instrument), default display is integer value.
Function operation and parameter modification (writing to registers, Q address)			
0	Request the value written	DWord	Modbus write operation address (note: if the address changes, the write will not be executed). This parameter Edit Interface Module. only within the range of 100 – 1307(MODBUS register addresses)

	to the Modbus address		
4	Input data	DWord	Modbus write operation value, which writes the data to the "Modbus address for requested write" (note: data is written to the instrument only when the value changes). only within the range of 100 – 1307(MODBUS register addresses)
8	Request to read address	Dword	Modbus read operation address (note: when reading a double-word address, do not write an odd address).
12	Function Operation	Word	D15: Print feed paper
			D14: Print current recipe cumulative
			D13: Print Total Cumulative
			D12: Manual Feeding
			D11: Manual completion
			D10: Manual Clear Material
			D09: Manual Discharge
			D08: Manual Slow feed
			D07: Manual Middle feed
			D06: Manual Fast feed
			D05: Clamp/Loose bag

			D04: Clear Alarm
			D03: Reset to zero
			D02: Slow Stop
			D01: Emergency Stop
			D00: Start
14	Function Operation 1	Word	D05-15: Reserve
			D04: Clear In&Out ACUM
			D03: Manual Batch Completion
			D02: Clear batch count accumulation
			D01: Clear current recipe accumulation
			D00: Clear total accumulation

5.3.2 Device Description File GSD

The equipment description file for **G-2301P** can be **downloaded** from the website of Zhuzhou General Measure Technology Co., Ltd. (www.szgmt.com).

6. Print Format

6.1 Example of automatic print format:

Parameter Settings	Print ticket content (Chinese)
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Number of header lines	1	------(Header line)
Number of trailer lines	1	Packaging Details List
Auto Print Switch	ON	Time: 2025/06/09 15:19
Print format	24	Unit: kg
Print language	CHN (Chinese)	Formula No.: 100
Print line feed count	2	Total cumulative count Result
Additional information print interval	1	1 5.5
Additional information refers to the header/footer lines. Setting it to 0 means they will not be printed; setting it to 1 means the header/footer information will be automatically output with each print.		------(End of message line)
		(Feed line 1)
		(Feed line 2)
		------(Header Line)
		Packaging Details List

6.2 Recipe, Total Cumulative Printing

Recipe Printing	Total cumulative printing
----- ----- Recipe Cumulative Report Time: 2026/04/13 11:21	----- ----- Total Cumulative Report Time: 2026/04/13 11:21

Unit: Kg ----- Recipe Number: 1 Number of times: 18 Weight: 129.16 ----- ----- -----	Unit: Kg ----- Number of times: 18 Weight: 129.16 ----- ----- -----
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