GENERAL MEASURE

杰 • 曼 • 科 • 技

GMC-X1LF

Communication Manual

110612010004

V01.10.10 _01

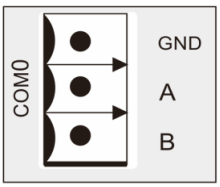
Directory

Chapter 1 Communication Connection

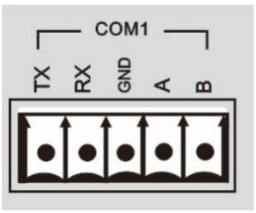
1.1 Serial Port Connection

GMC-X1LF instrument is equipped with **2** serial ports as standard: **1 RS485 port, 1 RS232/485** serial port (software parameter selection).

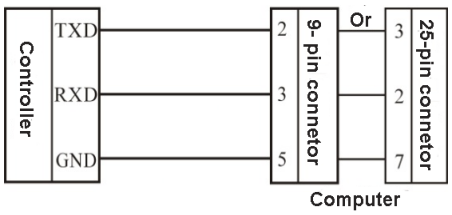
COM0: Instrument standard serial port.



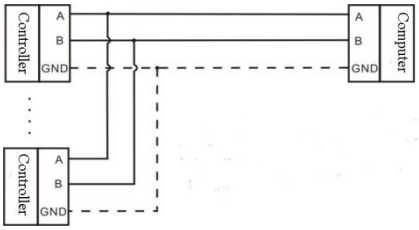
COM1: Instrument standard serial port**, RS485/RS232** mode is optional (serial port mode is selected in serial port parameters)



RS232 connection mode:



RS485 connection mode:



※ In **RS485** mode, **GND** is the signal ground. In the case of serious interference, low resistance wires should be used to connect the signal ground, so that the ground potential of each node is equal, which can significantly improve the communication quality.

※ The **GND** must be connected in **RS232** mode.

1.1.1 Troubleshooting Serial Port Faults

If the serial port is not communicating, check:

○ Click the figure above to check the wirings connection. Make sure the wiring is correct.

The RS232 interface must be connected to **all three wires, Rx, Tx, GND**.

The **RS485** interface must be connected to **A** and **B** wires.

○ Make sure connecting port parameters are the same to computer.

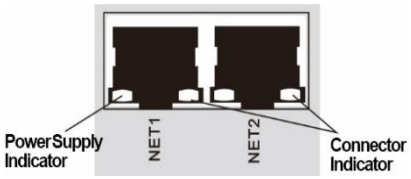
Slave number, baud rate, data format and communication protocol must be consistent with the host computer and **PLC**.

1.2 Network Port Connection

GMC-X1LF products support ordinary network port communication and bus communication (bus communication is an optional function, order need to declare). Support **TCP** protocol (**Modbus/TCP, Cont-A/TCP, Cont-B/TCP, r-Cont/TCP, rE-Cont/TCP, YH/TCP**) and **EIP/PN/EtherCat** bus protocol.

1) Dual network port option, network port built-in switch, easy to cascade, support **TCP** protocol.

2) When PN/EIP communication, it can connect to any network port of the instrument for communication.



3) When communicating with Ethernet CAT, Net2 serves as the entry point. When connecting to multiple devices, the devices must be connected in series to distinguish the order of entry and exit. For specific parameter settings, please refer to the communication manual of EtherCAT Communication.

1.2.1 Network port troubleshooting

If the network port is not communicating, check:

○ Check network port indicators.

The hardware connection is normal, and the internal indicator of the instrument is steady on.

The network wiring is properly connected and the connection indicator is blinking.

○ Check whether the communication protocol is consistent with that of the host computer and **PLC**.

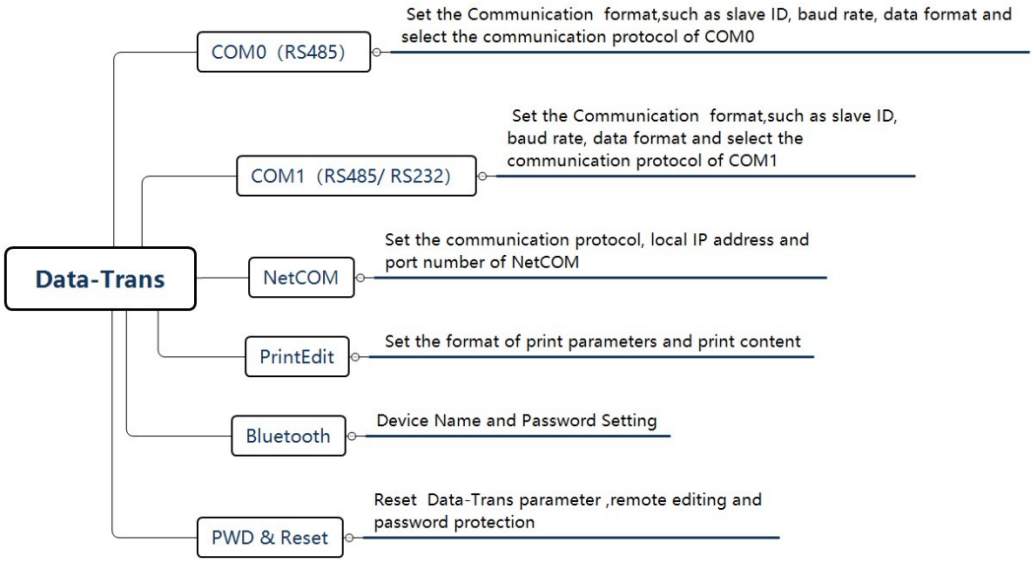
○ Confirm that **GMC-X1LF** can be pinged by the network. If not, check the hardware interface section.

○ Check whether **IP** conflicts exist.

○ Restart the instrument.

Chapter 2 Data-Trans

GMC-X1LF has rich communication function interface: **1 RS485** (serial port **0**), **1** RS232/485 (serial port **1**), **1** network port communication interface (support **TCP, PN/EIP EtherCAT** bus function).



2.1 Data-Trans parameter

GMC-X1LF instrument provides standard configuration **of 1 RS485** (serial port **0**), **1** RS232/485 (serial port **1**), two serial port parameters as follows:

Parameters	Initial value	Instructions
COM0/COM1 ID	**01**	Range: **01-99**
Baudrate	**38400**	Range: **1200,2400,4800,9600,19200,38400,57600,115200**
Protocol	**Modbus RTU**	Range: **Modbus RTU**, **Modbus ASCII**, **Cont-A (continuous transmit-CB920)**, **Cont-B (continuous transmit-TT)**, **r-Cont**, **rE-Cont**, **YH(protocol)**, Print**(print)**
Data Format	**8-E-1**	Range: **8-N-1**, **8-e-1**, **8-o-1**, **7-e-1**, **7-o-1** (Note: Only 8-bit data bits are supported when modbus protocol)
DwordFormat	**AB-CD**	Range: **AB-CD** (high word in front), **CD-AB** (low word in front)
Send Gap	**20ms**	The time interval between frames under the continuous send protocol. The value ranges from **0** to **1000ms**. Default: **20ms**
RS485/RS232	**485** mode	Range: **485** mode, **232** mode optional. ※ This parameter is available only under COM**1**

2.2 Network Port Communication Parameters

2.2.1 Parameter Description

Parameters	Initial value	Instructions
Protocol	**Modbus/TCP**	When selecting a common network port, the protocols are: **Modbus/TCP**,**Cont-A/TCP**,**Cont-B/TCP**, **r-Cont/TCP**, **rE-Cont/TCP**, **YH/TCP**, Default:**Modbus/TCP**
DwordFormat	**AB-CD**	Range: **AB-CD** (high byte in front), **CD-AB** (low byte in front); This parameter is visible when Modbus/TCP PN/EIP/EtherCat is selected to send.
Send interval	**20ms**	Range: 0-1000ms**;** When the communication mode is Cont-A/**TCP**, Parameters are visible when **Cont-B/TCP,r-Cont/TCP, rE-Cont/TCP, YH/TCP,** and are used to control the time interval between frames.
IP Config	**192.168.0.100**	Range of each IP segment: **0 to 255**; This parameter is available for network port communication and PN/EIP communication.
Socket	**502**	Range: **1-65535;** This parameter is available for network port communication and PN/EIP communication.
Write Enable	Disable	Range: Disable, Enable; (This parameter is visible when selecting PN/EIP attachment board) Enable: When PN/EIP communication, the instrument parameters are controlled by the "module parameters" in the master station configuration, and the parameters set in the "module parameters" are automatically written to the instrument when the instrument is powered on. Disable : When PN/EIP communication, instrument parameters are not controlled by "module parameters" of the master station.
GSD Type	Standard	If the option is PN bus, this parameter can be seen. Standard /Simple is optional

2.3 Communicate the floating-point switch

Parameters	Initial value	Instructions
Float Data SW	Disable	When turned on, the corresponding parameter will become a floating point number read and write type (serial and network port communication)

2.4 Print Edit

When the serial port parameter is selected as **"Print"**, when input print signal, the instrument data can be printed.

Parameter		Initial value	Instructions
HeaderLines		**1**	Choose how many header lines to use, Range: **0** to **4**
EndLines		**1**	Choose how many tailer lines to use, Range: **0** to **4**
Ticket Gap		**2**	The number of lines between each print, Range: **0** to **99**
Content		Display weight	Optional: DisplayWt, Gross Wt, Net Wt,, Net+Tare (two lines), All Info. (Gross weight + Net weight + Tare) (print includes units)
Print Lang		English	Chinese/English
Header Edit	HeaderLines**1**	----------	Header information line, **16** English characters can be edited
	HeaderLines**2**	----------	
	HeaderLines**3**	----------	
	HeaderLines4	----------	
Ender Edit	EnderLines**1**	---------	Tailer Information line, **16** English characters can be edited
	EnderLines**2**	----------	
	EnderLines**3**	----------	
	EnderLines**4**	----------	

Example of print format applications:

Parameter setting		Print Content (English)
Header Lines	**2**	----------
EnderLines	**1**	------**TEST**------
Ticket Gap	**3**	No. **Xxxxxxx1**
Content	Display weight	Display weight
Print Lang	Chinese	NT **-X.XXXX kg**
HeaderLine1	----------	------**END1**------
HeaderLine 2	------**TEST**-----	
EnderLine 1	------**END1**-----	
		---------- (Print 2rd)

2.5 Communication **Set** Password and reset

PWD.&Reset		
COM Reset	//	Restore communication parameters to factory Settings.
Remote Edit	Enable	After turn on, the formula parameters can be set through the communication port. Otherwise, the communication port is read-only to the basic parameters.
PWD. Protect	Disable	Range: Enable, Disable; Password is required to enter the Modify parameter setting option after it is on.
PWD. Edit	**000000**	modify the password. The password must be 6 characters.

Chapter 3 Communication Protocol and Address

3.1 Modbus Protocol

3.1.1 Function code and Exception code Description

The function code supported by the instrument

Function code	Name	Instructions
03	Read register	Read up to **125** registers at a time
06	Write single register	
16	Write multiple registers	This instrument command only supports writing double registers, the address must be aligned when writing, only a part of the double register is not allowed to be written, and read part is allowed when reading.
01	Read Coil	Note that this length is in bits.
05	Write Coil	

Note: This instrument only supports the above **MODBUS** function codes, the instrument will not respond when sending other function codes to the instrument.

Exception Code response

Code	Name	Meaning
02	Illegal data address	For this instrument, this error code indicates that the received data address is an disallowed address.
03	Illegal data value	The data written is not within the allowed range.
04	Slave machine failure	An unrecoverable error occurs when the instrument is attempting to perform the requested operation.
07	Unsuccessful programming request	For the instrument, the command received cannot be executed under the current conditions.

3.1.2 Transmission mode

RTU mode

(**1**) When communicating in **RTU** mode, every **8** bits (**1** byte) in the message is divided into two **4-bit hexadecimal** characters.

(**2**) The end of a frame must be more than 3.5 characters apart**. For a more reliable end, it is recommended to use an interval of more than 4.0 characters.**

The specific protocol is as follows:

Supported data formats: 8-bit data bit**,** 1-bit stop bit, parity check (**8-E-1**)

8-bit data bit**,** 1-Stop Bit, Odd check (**8-O-1**)

8-bit Data bits**,** 1-Stop Bit, no check (**8-N-1**)

Code: Binary

3.1.3 Modbus Communication Address Table

PLC address	Display address	Meaning	Instructions
Weight status information parameters			
40001-40002	**0000-0001**	Current weight value (**4** bytes signed integer) (when communication floating-point switch is turned on, displayed floating-point number)	

<table>
<tr><td>40003-40004</td><td>0002-0003</td><td colspan="4">Decrement mode: The weight of using the decrement method
Other modes |: reserved</td></tr>
<tr><td rowspan="14">40005</td><td rowspan="14">0004</td><td rowspan="14">Weight status flag bit</td><td>Bit</td><td colspan="2">Instructions</td></tr>
<tr><td>D13-15</td><td>reserve</td><td rowspan="13">※ Indicates the weight status of the instrument, when it is the current state, the status bit shows "1".
If the current weight is zero and stable, the address D0D1 status bit is "1"</td></tr>
<tr><td>D12</td><td>Bipolar</td></tr>
<tr><td>D11</td><td>Calculate weight by using theoretical value</td></tr>
<tr><td>D10</td><td>ADC Failure</td></tr>
<tr><td>D9</td><td>Current display net weight</td></tr>
<tr><td>D8</td><td>Millivolt stable</td></tr>
<tr><td>D7</td><td>Loadcell negative overflow</td></tr>
<tr><td>D6</td><td>Loadcell positive overflow</td></tr>
<tr><td>D5</td><td>Weight negative overflow</td></tr>
<tr><td>D4</td><td>Weight positive overflow</td></tr>
<tr><td>D3</td><td>Overflow status</td></tr>
<tr><td>D2</td><td>Display weight negative sign</td></tr>
<tr><td>D1</td><td>Zero</td></tr>
<tr><td>D0</td><td>Stable</td></tr>
<tr><td rowspan="14">40006</td><td rowspan="14">0005</td><td rowspan="14">Error Code 1</td><td>D13-15</td><td colspan="2">Reserve</td></tr>
<tr><td>D12</td><td colspan="2">Perform Remote calibration when prohibited</td></tr>
<tr><td>D11</td><td colspan="2">In hardware protection during calibration</td></tr>
<tr><td>D10</td><td colspan="2">The previous weight point is not calibrated</td></tr>
<tr><td>D9</td><td colspan="2">Out of mini resolution</td></tr>
<tr><td>D8</td><td colspan="2">Weight input exceeds max range</td></tr>
<tr><td>D7</td><td colspan="2">The weight input cannot be zero</td></tr>
<tr><td>D6</td><td colspan="2">Weight calibration is less than zero or the previous calibration point</td></tr>
<tr><td>D5</td><td colspan="2">Loadcell positive overflow when Weight calibrating</td></tr>
<tr><td>D4</td><td colspan="2">Loadcell negative overflow when weight calibration</td></tr>
<tr><td>D3</td><td colspan="2">Weight calibration is unstable</td></tr>
<tr><td>D2</td><td colspan="2">Loadcell positive overflow when zero calibration</td></tr>
<tr><td>D1</td><td colspan="2">Loadcell negative overflow when zero calibration</td></tr>
<tr><td>D0</td><td colspan="2">Zero calibration is unstable</td></tr>
</table>

40007	**0006**	Error Code **2**	**D15**	Hold
			D14	Prohibit zero when running
			D13	Remote tare operation allow switch is not enabled during remote tare operation
			D12	Does not allow taring in net weight status
			D11	The weight is negative when taring
			D10	Loadcell positive overflow when taring
			D9	loadcell negative overflow when taring
			D8	Unstable when taring
			D7	Does not allow zeroing in net weight status
			D6	The remote zero switch is not enabled during remote zero
			D5	Loadcell positive overflows when zeroing
			D4	Loadcell negative overflow when zeroing
			D3	Unstable when zeroing
			D2	Zero out of range
			D1	Zero unstable when powered on
			D0	Power-on zero is out of range
40008-40010	**0007-0009**	Reserve		
40011	**0010**	Process status flag bit	**D10-15**	Reserve
			D9	**IO** test status
			D8	Printing, (valid when the instrument perform the print operation)
			D7	Reserve
			D6	Simulated operating condition
			D5	Pause
			D4	Slow Stop
			D3	Supply Material
			D2	Lack Material
			D1	Lower level
			D0	Upper level
40012	**0011**	Process status flag bit	**D15**	Wait for stop signal
			D14	Zero zone
			D13	0:Nozzle Up; 1: Nozzle Down
			D12	Push bucket
			D11	Normal feed bucket completed (valid after waiting, zero after starting filling bucket again)
			D10	Alarm
			D9	Weigh OK
			D8	Waiting

			D7	Under Replenish
			D6	Under
			D5	Over
			D4	Fine Feed
			D3	Medium Feed
			D2	Coarse Feed
			D1	Before Feed
			D0	0: Stop; 1: Run
40013	**0012**	Reserve		
40014	**0013**	Status Tips	**0-** No action; **1-** Raise Bucket; **2-** Wait for start signal; **3-** Wait for lower material level; **4-** Delay; **5-** Coarse Feed; **6-** Medium Feed; **7-** Fine Feed; **8-** Free Fall delay; **9-** Free Fall correction; **10-** Over/Under; **11-** Under feed **12-** Over/Under pause; **13-** Raise nozzle; **14-** Waiting; **15-** Weigh OK; **16-** Push bucket; **17-** Wait stop; **18-** Pause; **19-** Batches complete	
40015	**0014**	Process alarm 1	**D12**	Batches Complete Alarm
			D11	Do not allow filling liquid (reduction scale, current weight below lower limit of material level, in supplying material state)
			D10	Material level parameters are not reasonable
			D9	Decrement protection
			D8	Leakage, when the coarse feed flow rate is lower than the lower limit of the coarse feed flow rate, the instrument default contain leakage, the instrument output buzzer alarm, the main interface prompts the leakage, and stops
			D7	Over/under Pause
			D6	Over/under
			D5	Tare detection error
			D4	Bump Bucket
			D3	OFL when starting

			D2	Do not define the lower nozzle/raise nozzle function, use the step raise nozzle function
			D1	There is an undefined IO in the IO module that must be defined
			D0	The formula setting is not reasonable alarm
40016-40018	**0015-0017**	Reserve		
40019-40020	**0018-0019**	Gross weight value (**4** bytes of signed integer)		Read only (floating-point numbers are displayed when the communication switch is turned on)
40021-40022	**0020-0021**	Net weight value (**4** bytes of signed integer)		
40023-40024	**0022-0023**	Tare(**4** bytes signed integer)		
40025-40026	**0024-0025**	Reserve		
40027-40028	**0026-0027**	Display weight value (float point type)		Read Only
40029-40030	**0028-0029**	Gross weight value (**4** bytes signed float point number)		
40031-40032	**0030-0031**	Net weight value (**4** bytes signed float point number)		
40033-40034	**0032-0033**	Tare (**4** bytes signed float point number)		
40035-40036	**0034-0035**	Reserved		
40037-40038	**0036-0037**	Code inside **AD** after filtering		Read Only
40039-40040	**0038-0039**	Loadcell voltage value		
40041-40042	**0040-0041**	Relative zero voltage value		
40043-40044	**0042-0043**	System cumulative weight (high 6 digits)		
40045-40046	**0044-0045**	System cumulative weight (low 9 digits)		
40047-40048	**0046-0047**	System cumulative frequency		
40049-40050	**0048-0049**	Cumulative weight(high 6 bit)		
40051-40052	**0050-0051**	Cumulative weight(low 9 bit)		
40053-40054	**0052-0053**	Cumulative Batches(high 6 bit)		
40055-40056	**0052-0053**	Cumulative Batches(low 9 bit)		
40057 ~ 40058	**0054 ~ 0055**	Waiting weight (previous weight)		
40059 ~ 40090	**0056 ~ 0089**	Reserve		

<table>
<tr><td>40091</td><td>0090</td><td colspan="3">Input status Reserve, readable, read:all 0</td></tr>
<tr><td rowspan="7">40092</td><td rowspan="7">0091</td><td rowspan="7">Input status area</td><td>Bit</td><td>Instructions</td></tr>
<tr><td>D5- D15</td><td>Reserve</td></tr>
<tr><td>D4</td><td>Input 5 status (extended Input 2)</td></tr>
<tr><td>D3</td><td>Input 4 states (extended input 1)</td></tr>
<tr><td>D2</td><td>Input 3 status</td></tr>
<tr><td>D1</td><td>Input 2 status</td></tr>
<tr><td>D0</td><td>Input 1 status</td></tr>
<tr><td>40093</td><td>0092</td><td colspan="3">Output status reserve, readable, read out data as 0</td></tr>
<tr><td rowspan="10">40094</td><td rowspan="10">0093</td><td rowspan="10">Output status area</td><td>Bit</td><td>Instructions</td></tr>
<tr><td>D9-15</td><td>Reserve</td></tr>
<tr><td>D8</td><td>Output 9 status (extended output 4)</td></tr>
<tr><td>D7</td><td>Output 8 status (extended output 3)</td></tr>
<tr><td>D6</td><td>Output 7 status (extended output 2)</td></tr>
<tr><td>D5</td><td>Output 6 status (extended output 1)</td></tr>
<tr><td>D4</td><td>Output 5 status</td></tr>
<tr><td>D3</td><td>Output 4 status</td></tr>
<tr><td>D2</td><td>Output 3 status</td></tr>
<tr><td>D1</td><td>Output 2 status</td></tr>
<tr><td>D0</td><td>Output 1 status</td></tr>
<tr><td>40095 ~ 40100</td><td>0094 ~ 0099</td><td colspan="3">Reserve</td></tr>
<tr><td colspan="5">Basic parameters area, remote editing parameters set to read-write when enabled, otherwise read-only</td></tr>
<tr><td>40101-40102</td><td>0100-0101</td><td colspan="2">PWR-On Zero</td><td>0%-99% of the maximum range; Initial value: 0% (off)</td></tr>
<tr><td>40103-40104</td><td>0102-0103</td><td colspan="2">Remote Zero</td><td>Range: 0 (off), 1 (on); Initial value: 1 (on)</td></tr>
<tr><td>40105-40106</td><td>0104-0105</td><td colspan="2">Zero range</td><td>1%-99% of the maximum range; Initial value: 20%</td></tr>
<tr><td>40107-40108</td><td>0106-0107</td><td colspan="2">Remote Tare</td><td>Range: 0 (off), 1 (on); Initial value: 1 (on)</td></tr>
<tr><td>40109-40110</td><td>0108-0109</td><td colspan="2">Tare Record</td><td>Range: 0 (off), 1 (on); Initial value: 0 (off)</td></tr>
<tr><td>40111-40112</td><td>0110-0111</td><td colspan="2">NetSign COR</td><td>Range: 0 (off), 1 (correct tare), 2 (returned gross weight); Initial value: 0 (off)</td></tr>
<tr><td>40113-40114</td><td>0112-0113</td><td colspan="2">Basic tare</td><td>Write tare,read the current tare. Range: 0~ full scale; Initial value: 0</td></tr>
<tr><td>40115-40116</td><td>0114-0115</td><td colspan="2">STAB Range</td><td>Range: 0-99, initial value: 1.</td></tr>
<tr><td>40117-40118</td><td>0116-0117</td><td colspan="2">STAB Timer</td><td>Range: 1-5000ms, initial value: 1000ms.</td></tr>
<tr><td>40119-40120</td><td>0118-0119</td><td colspan="2">TrZero Range</td><td>Range: 0-99, initial value: 1.</td></tr>
<tr><td>40121-40122</td><td>0120-0121</td><td colspan="2">TrZero Time</td><td>Range: 1-5000 milliseconds, Initial value: 1000</td></tr>
<tr><td>40123-40124</td><td>0122-0123</td><td colspan="2">Digit-Filter</td><td>Range: 0-9, initial value: 4</td></tr>
<tr><td>40125-40126</td><td>0124-0125</td><td colspan="2">Adv. Filter</td><td>Range: 0-99D, initial value: 0</td></tr>
<tr><td>40127-40128</td><td>0126-0127</td><td colspan="2">AD Sample Rate</td><td>Range: 0-9 (corresponds to 0-50; 1-60; 2-100; 3-120; 4-200; 5-240; 6-400; 7-480; 8-800; 9-960) Initial value: 200Hz</td></tr>
<tr><td>40129-40130</td><td>0128-0129</td><td colspan="2">Input range</td><td>Range: 0-5 (corresponds to 0:0-5mV; 1:0-10mV; 2:0-15mV,) Initial value: 1 (0-10mV)</td></tr>
</table>

40131 ~ 40200	**0130 ~ 0199**	Reserve		
Weight and calibration area, the weight parameters and calibration can be set after the remote calibration be On, otherwise read only				
40201-40202	**0200-0201**	Unit	Range: **0-3**; **0-t**, **1-kg**, **2-g**, **3-lb**	
40203-40204	**0202-0203**	Decimal	Range: **0-4**; **0-0**, **1-0.0**, **2-0.00**, **3-0.000**, **4-0.0000**	
40205-40206	**0204-0205**	Division	Range: **1,2,5,10,20,50,100,200,500**	
40207-40208	**0206-0207**	Full scale	Range: **0**- division *__200000__	
40209-40210	**0208-0209**	Reserve		
40211-40212	**0210-0211**	Auto Capture	Write **1** only; Write **1** to calibrate zero. Read: Current millivolts of the loadcell. Fixed **4** decimal points.	
40213-40214	**0212-0213**	Key In mV	Range: **0-150000**; Write millivolts	
40215-40216	**0214-0215**	Weight CP1	Write weight value to calibrate weight calibration point **1**	Read as the relative millivolts of the calibration point.
40217-40218	**0216-0217**	Weight CP2	Write the weight value to calibrate weight calibration point **2**	
40219-40220	**0218-0219**	Weight CP3	Write the weight value to the calibration weight point **3** calibration	
40221-40222	**0220-0221**	Weight CP4	Write the weight value to calibrate weight calibration point **4**	
40223-40224	**0222-0223**	Weight CP5	Write the weight value to calibrate weight point calibration **5**	
40225-40226	**0224-0225**	LC mV/V	Write using the actual sensitivity of the loadcell for theoretical value calibration	
40227-40228	**0226-0227**	LC Capacity	Write the total loadcell range for theoretical calibration	
40229-40230	**0228-0229**	Use T-CAL	Write **1** to enable theoretical calibration, write **0** to use calibration data	
40231-40232	**0230-0231**	CAL Correct	Write coefficient to correct calibration, write data integer, the system default writed data with **5** decimal points	
40233 ~ 40500	**0232 ~ 0499**	Reserve		
Recipe parameter area, read and write after remote editing is turned on				
40501-40502	**0500-0501**	Recipe ID	Initial value **1**; Range: **1 to 20**	
40503-40504	**0502-0503**	Target	Weight value write range: ≤ maximum range (communication floating-point switch is turned on, floating-point number is displayed)	
40505-40506	**0504-0505**	Co-F Remain		
40507-40508	**0506-0507**	Me-F Remain		
40509-40510	**0508-0509**	Free Fall		
40511-40512	**0510-0511**	NearZero Band		
40513-40514	**0512-0513**	Over Value		
40515-40516	**0514-0515**	Under Value		
40517-40518	**0516-0517**	Decrement		

		protection threshold	
40519-40520	**0518-0519**	Co-Fi Mini-Flow	
40521-40522	**0520-0521**	Nozzle Up SP1	
40523-40524	**0522-0523**	Nozzle Up SP2	
40525-40526	**0524-0525**	Supply Empty	
40527-40528	**0526-0527**	Supply Full	
40529-40530	**0528-0529**	Fast Wt Refresh	
40531-40550	**0548-0549**	Reserve	
40551-40552	**0550-0551**	Tare PDLY	Initial value: **0.5**; Range: **0 to 99.9** (s)
40553-40554	**0552-0553**	Co-F Inhibit T	Initial value: **0.9**; Range: **0 to 99.9** (**s**)
40555-40556	**0554-0555**	Me-F Inhibit T	Initial value: **0.9**; Range: **0 to 99.9 (s)**
40557-40558	**0556-0557**	Fi-F Inhibit T	Initial value: **0.9**; Range: **0 to 99.9 (s)**
40559-40560	**0558-0559**	FreeFall DLY	Initial value: **0.5**; Range: **0 to 99.9 (s)**, valid in multi decrement mode
40561-40562	**0560-0561**	Result Wait T	Initial value: **0.5**; Range: **0 to 99.9 (s)**
40563-40564	**0562-0563**	Nozzle Up PDLY	Initial value: **0.5**; Range: **0 ~ 99.9(s)**,single increments, valid in multi increment mode
40565-40566	**0564-0565**	Nozzle Up DLY	Initial value: **0.5**; Range: **0 ~ 99.9 (s)**, single increments, multi increments are valid
40567-40568	**0566-0567**	Move Bucket DLY	Initial value: **0.5**; Range: **0 to 99.9 (s)**, valid for single- increment
40569-40600	**0568-0599**	Reserve	
40601-40602	**0600-0601**	Ref. Counts	Initial value: **0**; Range: **1 to 99**.
40603-40604	**0602-0603**	CORR. Range	Initial value: **2.0**; Range: **0 to 9.9** (unit: %)
40605-40606	**0604-0605**	CORR.Degree	Initial value: **1**; Optional: **0:100%** correction; **1:50%** correction; **2:25%** correction
40607-40608	**0606-0607**	Result Detect	Initial value: **0**; Optional: **0:** off; **1:** Detection not paused; **2:** Detect and Pause
40609-40610	**0608-0609**	O/U Alarm T	Initial value: **2.0**; Range: **0.0 to 99.9 (s)**
40611-40612	**0610-0611**	Max. Counts	Initial value: **1**; Range: **1 to 99**.
40613-40614	**0612-0613**	Under Replenish valid time	Initial value: **0.5**; Range: **0 to 99.9 (s)**
40615-40616	**0614-0615**	Fill-ON T	Initial value: **0.5**; Range: **0 to 99.9 (s)**
40617 ~ 40618	**0616 ~ 0617**	Fill-OFF T	Initial value: **0**; Optional: **0:** off; **1:** On
40619-40620	**0618-0619**	Tare Detection	Weight written range:≤ maximum range
40621-40622	**0620-0621**	Tare Up Limit	Weight written range: ≤ maximum range
40623-40624	**0622-0623**	Tare Low Limit	Initial value: **0**; Optional: **0:** off; **1:** On
40625-40626	**0624-0625**	Bucket Tare	Weight writing range: ≤ maximum range
40627-40628	**0626-0627**	B Nozzle PROT	Initial value: **0**; Optional: **0:** off; **1:** On
40629-40630	**0628-0629**	Bump Weight	Weight written range: ≤ maximum range
40631-40632	**0630-0631**	Bump Alarm T	Initial value: **2.0**; Range: **0 to 99.9 (s)**
40633-40700	**0632-0699**	Reserve	

40701-40702	**0700-0701**	Fill Speed CTR.	**0:** Single Ctrl; **1:** Single Ctrl
40703-40704	**0702-0703**	Result Check	0: Stable Mode; 1: Delay Mode; 2: Stable&Delay:
40705-40706	**0704-0705**	Filling mode	**0:** Gross Filling **1:** Net Filling
40707-40708	**0706-0707**	Fill Permit REQ	Initial value: **0**; Optional: **0:** Disable **1:** Enable
40709-40710	**0708-0709**	Fill 1st Action	Initial value: **0**; Optional: **0:** tare first; **1:** lower nozzle first
40711-40712	**0710-0711**	M-Fill To ACUM	Initial value: **0**; Optional: **0:** Disable **1:** Enable
40713-40714	**0712-0713**	Proess FIRs CFG	Initial value: **0**; Optional: **0:** Disable **1:** Enable
40715-40716	**0714-0715**	Filling FIR	Initial value: **5**; Range: **0 to 9.**
40717-40718	**0716-0717**	Wait Result FIR	Initial value: **7**; Range: **0 to 9.**
40719-40720	**0718-0719**	Bucket Move FIR	Initial value: **3**; Range: **0 to 9.**
40721-40722	**0720-0721**	Feeding Switch	Initial value: **1**; Optional: **0:** Disable **1:** Enable
40723 ~ 40800	**0722 ~ 0799**	Reserve	
IO parameter setting area, readable-writable			
40801	**0800**	Input 1 Function definition	**0:**None; **1:** Start; **2:** E-Stop; **3:** Stop; **4:** Pause; **5:** Zero; **6:** Clear Alarm; **7:** Change Recipe; **8:** Print; **9:** P_EMPTY_LINE r; **10:** Bucket ->Permit; **11:** Tare/Fill Star; **12:** Nozzle Down OK; **13:** Supply Full; **14:** Supply NotEmpty; **15:** M Co-Fill (LS); **16:** M Fi-Fill (LS)); **17:** Start/EStop (LS) **18:** Start/Stop (LS) **19:** Run Once **;** **20:** Simulation Run
40802	**0801**	Input 2 Function definition	
40803	**0802**	Input 3 Function definition	
40804	**0803**	Input 4 Function Definition	
40805	**0804**	Input 5 Function definition	
40806	**0805**	Output 1 function definition	**0:** None; **1:** Running **2:** Stopped **3:** Co-Fill **4:** Me-Fill **5:** Fi-Fill **6:** Wait Result **7:** DONE
40807	**0806**	Output 2 Function definition	
40808	**0807**	Output 3 Function	

		definition	**8:** Supply Empty **9:** FILL Supplement **10:** Over/Under **11:** Alarm **12:** NearZero **13:** Nozzle Bumped **14:** Bucket Push **15:** Batch complete **16:** Nozzle Down/Up **17:** Nozzle Up Step1 **18:** Nozzle Up Step2 **19:** COM Heartbeat
40809	**0808**	Output 4 Function definition	
40810	**0809**	Output 5 Function definition	
40811	**0810**	Output 6 Function definition	
40812	**0811**	Output 7 Function definition	
40813	**0812**	Output 8 Function definition	
40814	**0813**	Output 9 Function definition	
40814-40900	**0814-0899**	Reserve	
40901	**0900-0901**	Set batch times	Initial value: **0**; Range: **0-9999**
40902	**0902-0903**	Remain batches times	
40903-41000	**0904-0999**	Reserve	
41001-41002	**1000-1001**	Target 1	Weight value written range: ≤ maximum range
41003-41004	**1002-1003**	Target 2	
……	**……**	……	
41040	**1039**	Target 20	
41041-42000	**1040-1999**	Reserve	
42001-42002	**2000-2001**	Recipe 1 Cumulative weight (high 6 bit)	Write **1** Clear the current cumulative
42003-42004	**2002-2003**	Recipe 1 Cumulative weight (low 9 bit)	
42005-42006	**2004-2005**	Recipe 1 Cumulative weight	
42007-42008	**2006-2007**	Recipe 2 Cumulative weight (high 6 bit)	
42009-42010	**2008-2009**	Recipe 2 Cumulative Weight (low 9 bit)	
42011-42012	**2010-2011**	Recipe 2 Cumulative weight	
……	**……**	……	
42115-42116	**2114-2115**	Recipe 20 Cumulative weight (high 6 bit)	
42117-42118	**21116-2117**	Recipe 20 Cumulative Weight (high 6 bit)	
42119-42120	**2118-2119**	Formula 20 cumulative times	
Communication parameter setting area, readable and writable			

48001	**8000**	COM0 ID	Slave number of serial port **0**; Range: **01-99**
48002	**8001**	**COM0** Baud rate	Initial value: **5-38400**, range: **0-7** corresponding to: **0-1200**, **1-2400**, **2-4800**, **3-9600**, **4-19200**, **5-38400**, **6-57600**, **7-115200**;
48003	**8002**	**COM0** Protocol	Initial value: **0-Modbus RTU**, range: **0-Modbus RTU**, **1-Modbus Ascii**, **2-Cont-A**, **3-Cont-B**, **4-r-Cont**, **5-rE-Cont**, **6-YH**, **7-Print**
48004	**8003**	**COM0** Data Format	Initial value: **1** (**8E1**); Range: **0-8N1**, **1-8E1**, **2-8O1**, **3-7E1**, **4-7O1**
48005	**8004**	**COM0** DwordFormat	Initial value :**0 (AB-CD)** Range: **0-ab-cd**, **1-CD-AB**.
48006	**8005**	**COM0** Send Gap	Initial value: **20ms,** range 0-1000ms
48007	**8006**	Float Data SW	Initial value: Disable, range: 0: Disable, 1: Enable
4800848020	**80078019**	Reserve	
48021	**8020**	COM1 ID	Refer **to COM0** parameters
48022	**8021**	**COM1** Baud rate	
48023	**8022**	**COM1** Protocol	
48024	**8023**	**COM1** Data Format	
48025	**8024**	**COM1** DwordFormat	
48026	**8025**	**COM1** Send Gap	
48027	**8026**	**COM1 RS485/Rs232**	Initial value: **1-RS485;** Range**: 0-RS232; 1-RS485**
48028 ~ 48100	**8027 ~ 8099**	Reserve	
48101	**8100**	NetCOM Protocol	The protocols are **0-Modbus/TCP**, **1-Cont-A/TCP**, **2-Cont-B/TCP**, **3-r-Cont/TCP**, **4-rE-Cont/TCP**, and **5-YH/TCP**. When **Ethernet/IP** or **Profinet** is selected, this parameter cannot be set
48102	**8101**	NetCOM DwordFormat	For standard network ports, can set **0-AB-CD**, **1-CD-AB** When **Ethernet/IP** or **Profinet** is selected, this parameter cannot be set
48103	**8102**	NetCOM Send interval	The communication mode is **1-Cont-A/TCP**, **2-Cont-B/TCP**, **3-r-Cont/TCP**, **4-rE-Cont/TCP, 5-YH/TCP**. This parameter is used to set the interval for continuous transmission. Initial value: **20ms**, range from **0** to **1000ms**
48104-48107	**8103-8106**	IP COnfig	Initial value: **192.168.0.100,** The order is the first to fourth IP
48108-48111	**8107-8110**	Target **IP**	Initial value: **192.168.0.101,** The order is the first to fourth IP
48112	**8111**	NetCOM	Initial value: **502**, range: **0-65535**, set the

		Socket	network communication port number
48113	**8112**	Write Enable	Initial value: Disable, range: 0: Disable, 1: Enable
48114-48200	**8113-8199**	Reserved, readable, read： all 0	
48201	**8200**	HeaderLines	Range: **0-4**, select how many header lines to use
48202	**8201**	EnderLines	Range: **0-4**, select how many tailer lines to use
48203	**8202**	Print interval	Range: **0-99**, the number of lines spaced between each print
48204	**8203**	Print content	Initial value: **0**. Displayed weight. Range: **0-4**, optional: **0**, displayed weight, **1**, gross weight, **2**, net weight, **3**, net weight + tare (two lines), **4**, all information (gross weight + net weight + tare)
48205	**8204**	Print language	**0**: English **1**: Chinese
48206	**8205**	Information line selection	Range: **1-8**, corresponding to header information **1-4** and tail information **1-4**. **0** after power-on. After writing, read is the written value
48207-48222	**8206-8221**	The character content of the printed message (**16** characters)	**Ascii** codes support **0-9**, **a-z**, **A-Z**, 'space', and '**-**'
48221 ~ 48250	**8222 ~ 8249**	Reserved, readable, read:all 0	
48251-48256	**8250-8255**	Bluetooth device name **6** characters	Only the **Ascii** codes of **0-9**, **a-z**, **A-Z**, 'space', and '**-**' are supported
48257 ~ 48280	**8256 ~ 8279**	Reserved, readable, read:all 0	
48281	**8280**	Language	**0**: Chinese **1**: English
48282	**8281**	year	
48283	**8282**	month	
48284	**8283**	day	
48285	**8284**	clock	
48286	**8285**	minute	
48287	**8286**	second	
48288	**8287**	ScreenSleep	Initial value: 600; Range: 0-3600s
48289	**8288**	Standard IO mode	0:low level valid
48290	**8289**	Extended IO mode	0: Low level valid
48291	**8290**	Scale Structure	0: Single increment 1: Multi increment 2: Multi decrement
48292 ~ 48300	**8291 ~ 8299**	Reserve, readable, read: all 0	
I/O test parameters, readale-writable			
48301	**8300**	**I/O** test mode	Parameter range: **0-1**, 0**:** exit I/O **test** mode, 1: Input serial port I/O test **mode**, must closed after test completed,then the instrument can enter the normal state.

48302	**8301**	Input test **1**	Read **0** means input invalid, and read **1** means input valid. Writing any value is invalid and only works in IO test mode
48303	**8302**	Input test **2**	
48304	**8303**	Input Test **3**	
48305	**8304**	Input **1** test	
48306	**8305**	Input **2** Test	
48307 ~ 48350	**8306 ~ 8349**	Reserve	
48351	**8350**	Output **1** Test	Range: **0-1**, write: **0**: off, **1**: output valid(only valid in **IO** test mode), read as the current **IO** port status, **0**: off, **1**: on
48352	**8351**	Output **2** Test	
48353	**8352**	Output **3** Test	
48354	**8353**	Output **4** Test	
48355	**8354**	Output **5** Test	
48356	**8355**	Output **1** Test	
48357	**8356**	Output **2** Test	
48358	**8357**	Output **3** Test	
48359	**8358**	Output **4** Test	
48360 ~ 48600	**8359 ~ 8599**	Reserve	
Function operation class address area (corresponding to coil function), readable-writable			
48601	**8600**	Zero	Write **1** perform the operation Read:all 0
48602	**8601**	Tare	
48603	**8602**	Clear tare	
48604	**8603**	Gross/net weight switch	
48605	**8604**	Zero Calibrate	
48606	**8605**	Print	
48607	**8606**	Feed Paper	
48608	**8607**	Start	
48609	**8608**	Slow Stop	
48610	**8609**	E-Stop	
48611	**8610**	Pause	
48612	**8611**	Clear Alarm	
48613	**8612**	Select recipe	
48614	**8613**	Tare/Start Filling	
48615	**8614**	Lower nozzle	
48616	**8615**	Manual Coarse Feed	
48617	**8616**	Manual Fine Feed	
48618	**8617**	Manual run Once	
48619	**8618**	Clear accumulation	
48620 ~ 48900	**8619 ~ 8899**	Reserve	
Reset parameter area			
48901	**8900**	Reset all parameter	Write **1** perform the corresponding reset
48902	**8901**	Reset uncalibrated	

		parameters	Operation. Read:all 0
48903	**8902**	Reset calibration parameters	
48904	**8903**	Reset Basic parameters	
48905	**8904**	Reset I/O definition	
48906	**8905**	Reserve	
48907	**8906**	Reset apply parameters	
48908	**8907**	Communication parameter reset	
48909	**8908**	Reset Recipe parameter	
48910 ~ 48980	**8909 ~ 8979**	Reserve	
48981-48988	**8980-8987**	Edit Boot **logo** characters **1-8** (**8** characters)	The order corresponds to the first **1-8** characters of the boot logo, need to write **Ascii** code, range: **0-9**,**A-Z**,**a-z**, space, '**-**'
48989 ~ 49000	**8988 ~ 8999**	Reserve	
Instrument System information area, read-only area			
410001	**10000**	Software version (high byte)	
410002	**10001**	Software version (low byte)	If the read is **10000**, **version 01.00.00**
410003	**10002**	Compile time (year)	
410004	**10003**	Compile time (month day)	
410005-410017	**10004-10016**	Instrument serial port **13** characters	
410018-410029	**10017-10028**	Instrument code **12** characters	
410030	**10029**	Reserve	
410031-410040	**10030-10039**	Instrument model number **10** characters	
410041	**10040**	Attach board **01** information	
410042	**10041**	Attach board **02** information	
410043 ~ 410100	**10042 ~ 10099**	Reserve	
410101-410106	**10100-10105**	**MAC1** address of instrument	
410107-410112	**10106-10111**	Reserved	
410113-410118	**10112-10117**	Bluetooth **MAC** address	
410119 ~ 410200	**10118-10199**	Reserve	
410201	**10200**	Basic parameter remote edit	Switch status bit, read only: Read: **0**, Disable; **1**, Enable
410202	**10201**	Basic parameter password protection	
410203	**10202**	Remote Calibration	
410204	**10203**	Calibration Hardware protection	
410205	**10204**	Calibrated Password protection	
410206	**10205**	Recipe parameters remote edit	
410207	**10206**	Recipe parameters Password protection	
410208	**10207**	communication	

		parameters remote edit	
410209	**10208**	Communication parameter password protection switch	
410210	**10209**	System maintenance parameter remote edit	
410211	**10210**	System maintenance parameters password protection	
Coil address			
0x0001	**0000**	Zero	The contents are readable and writable coils Writing ON is valid Read as **0**
0x0002	**0001**	Tare	
0x0003	**0002**	Clear tare	
0x0004	**0003**	Gross/Net weight switch	
0x0005	**0004**	Zero	
0x0006	**0005**	Print	
0x0007	**0006**	Print feed paper	
0x0008	**0007**	Start	
0x0009	**0008**	Slow Stop	
0x0010	**0009**	E-Stop	
0x0011	**0010**	Pause	
0x0012	**0011**	Clear Alarm	
0x0013	**0012**	Select recipe	
0x0014	**0013**	Tare/start filling liquid	
0x0015	**0014**	Lower nozzle complete	
0x0016	**0015**	Manual coarse feed	
0x0017	**0016**	Manual fine feed	
0x0018	**0017**	Run once manually	
0x0019	**0018**	Clear accumulations	
0x0020~0x0300	**0019 ~ 0299**	Reserve	
0x0301	**0300**	Reset all parameters	This area only writes Write **ON** to perform reset operation Read **0**
0x0302	**0301**	Uncalibrated parameter reset	
0x0303	**0302**	Calibration reset	
0x0304	**0303**	Basic parameters reset	
0x0305	**0304**	**I/O** Definition Reset	
0x0306	**0305**	Reserve	
0x0307	**0306**	Application parameters reset	
0x0308	**0307**	Communication parameters reset	
0x0309	**0308**	Recipe parameters reset	
0x0310~0x0400	**0309-0399**	reserve	
0x0401	**0400**	Input **1** status	Read only area Read Return each input port status
0x0402	**0401**	Input **2** status	

0x0403	**0402**	Input **3** status	bit **0**: invalid; **1** valid
0x0404	**0403**	Input **1** status	
0x0405	**0404**	Input **2** status	
0x0406~0x0450	**0405 ~ 0449**	reserve	
0x0451	**0450**	Output **1** status	Read only area Read return each output status bit **0**: invalid; **1** valid
0x0452	**0451**	Output **2** status	
0x0453	**0452**	Output **3** Status	
0x0454	**0453**	Output **4** Status	
0x0455	**0454**	Output **5** status	
0x0456	**0455**	Expand output **1** status	
0x0457	**0456**	Expand output **2** status	
0x0458	**0457**	Expand output **3** status	
0x0459	**0458**	Expand output **4** status	
0x0460~0x0500	**0459 ~ 0499**	Reserve	
0x0501	**0500**	Remote Editing (basic parameters)	Read only parameter area
0x0502	**0501**	Password Protection (basic parameters)	
0x0503	**0502**	Remote calibration (calibration parameters)	
0x0504	**0503**	Hardware Protection (calibration parameters)	
0x0505	**0504**	Password protection (calibration parameters)	
0x0506	**0505**	Remote Editing (apply parameters)	
0x0507	**0506**	Password Protection (application parameters)	
0x0508	**0507**	Remote Editing (communication parameters)	
0x0509	**0508**	Password Protection (communication parameters)	
0x0510	**0509**	Remote editing (System maintenance parameters)	
0x0511	**0510**	Password protection (system maintenance parameters)	
0x0512~0x0800	**0511 ~ 0799**	Reserve	

3.2 Cont-A **(continuous send** -CB920)

GMC-X1LF Serial port protocol When "Continuous Send A **(CB920)**" is selected, data is continuously sent in the following format.

Status	**,**	Content	**0/1**	+/-	Display Value	Unit	**CR**	**LF**
2-bit	**2C**	**2** bit	**30**	**2B**/**2D**	7-bit	**2**-bit	**0D**	**0A**

Where:

Status -- **2** bits**, OL**(overflow) : **4FH 4CH**; **ST**(stable):**53H 54H**; **US**(unstable):**55H 53H**
Gross weight **-- 2** bits**, GS**(gross weight) **: 47H 53H; NT**(net weight) **: 4EH 54H;**
0/1-1 digit**, (30H/31H)** sent alternately.
Units -- **2** bits, such as **kg: 6BH 67H; g:20H 67H, etc**
Example: When the instrument automatically sends the following frame of data

53 54 2C 47 53 30 2B 20 20 20 20 32 35 34 33 39 0D 0A

the current instrument status: stable, gross weight, data value is positive, the current weight value is **254** kg

3.3 Cont-B **(Continuous** transmission **-tt)**

When the serial port protocol of **GMC-X1LF** is set to "Cont-**B (tt)**", the collected data will be automatically sent to the host

STX	Status **1**	Status **2**	Status **3**	Display Value	Loadcell voltage	**CR**	Checksum
02H	**1** bit	**1** bit	**20H**	**6** bits	**6** bits	**0D**	**1** bit

Status **1**:

bit7	**bit6**	**bit5**	**bit4**		**bit3**	**bit2**		**bit1**	**bit0**
Fixed: **0**			**t**	**0**	**0**	**0**	**0**	**1**	**0**
			kg	**0**	**1**	**0.0**	**0**	**1**	**1**
			g	**1**	**0**	**0.00**	**1**	**0**	**0**
			lb	**1**	**1**	**0.000**	**1**	**0**	**1**
						0.0000	**1**	**1**	**0**
			Weight Unit			Decimal point			

Status **2**:

bit7	**bit6**	**bit5**	**bit4**	**bit3**	**bit2**	**bit1**	**bit0**
Reserve	Reserve	Reserve	0- Weight	1- Unstable	1- Overflow	1- negative	1- Net weight
Fixed 0	Fixed 1	Fixed 1		0- Stable	0- Normal	0- positive	0- Gross weight

3.**4 r-Cont**

GMC-X1LF serial port protocol when "**r-Cont**" is selected, the collected data is automatically sent to the host machine in the following format without sending any commands to the weight transmitter.

STX	Scale No.	Channel No.	Status 1	Status **2**	Display Values	**CRC**	**CR**	**LF**
02H	2-bit	**31H**	**1** bit	**1** bit	**6** bits	**2** bits	**0D**	**0A**

Instruction:

Scale No. - **2** digits, ranging from **01 to 99**

Status **1** -- **1** bit

bit7	**bit6**	**bit5**	**bit4**		**bit3**	**bit2**		**bit1**	**bit0**
Fixed:**0**			**t**	**0**	**0**	**0**	**0**	**0**	**0**
			kg	**0**	**1**	**0.0**	**0**	**0**	**1**
			g	**1**	**0**	**0.00**	**0**	**1**	**0**
			lb	**1**	**1**	**0.000**	**0**	**1**	**1**

				0.0000	**1**	**0**	**0**
	Weight unit			Decimal point			

Status **2--1** bit

D6	D5	D4	D3	D2	D1	D0
Fixed: **1**.	Fixed : **0**	Gross:**0**; Net:**1**;	**0**: positive **1**: negative	**0**: Non-zero **1**: zero	**0**: Normal **1**: Overflow	**0**: unstable **1**: Stable

Weight value - **6** digit unsigned number; Return "Space space **OFL** space" when the weight is positive (negative) overflowed

CRC - **2** digits, checksum

All values before the check digit are added and converted to decimal data, then the last two digits are converted to **ASCII** (tens first, ones after). For example

If you have the following frame of data:

02	**30**	**31**	**43**	**47**	**4F**	**4B**	**39**	**31**	**0D**	**0A**

The sum of 02 to 4B is 187 (**Hex**) and **converted to 391 in decimal form.** It can be calculated that the check code for this data frame are **39 and 31.**

For example:

The current instrument automatically returns data: **02 30 31 31 40 41 20 20 20 37 30 30 32 34 0D 0A**

the current status of the instrument: stable, the weight value is positive, and the current weight value is **700**.

3.5 rE-Cont

In this way, there is no need to send any command to the weighing display, and the display automatically sends the collected data to the supremacist.

Return data frame format description:

Status	,	Content	,	+/-	Display Value	Unit	**CR**	**LF**
2-bit	**2C**	**2** bit	**2C**	**2B/2D**	7-bit	**2** bits	**0D**	**0A**

Instruction:

Status -- **2** bits, **OL**(overflow):**4FH 4CH; ST**(stable):**53H 54H; US**(unstable):**55H 53H**

Content **-- 2** bits, **GS(**gross weight) : **47H 53H; NT**(net weight) : 4EH 54H;

Display value **- 7** digits, including a decimal point, the upper part is a space if no decimal point

Unit -- **2** digits, such as **kg: 6BH 67H; g:20H 67H; t:20H 74H; lb:6CH 62H**

For example:

When the weighing display automatically sends the following frame of data:

53 54 2C 47 53 2C 2B 20 20 20 20 38 30 38 20 74 0D 0A

Means:the current status is stable, the data value is positive, and the display value is **808t**

3.6 YH(Protocol)

If the serial port protocol of GMC-X1LF is set to **YH,** data is transmitted in the following format. Under this protocol, the data is output in **ASCII code, and each frame data is** composed of 9 groups (including decimal points). Data transmission first low then high, there is a group of delimiter "=" **between each frame data, send data for gross weight, such as the current gross weight 70.15,** continuously send **51.0700**=51.0700**...**

For example: **123.9**

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8
=	9	.	3	2	1	0	0	0

Where: the high position is insufficient to fill **0**, the decimal point accounts for **1** byte, and **Bit8** is a negative sign "-" when negative.

3.7 PROFINET Communication

The GMC-X1LF display has two PROFINET-IO bus connection ports, NET1 and NET2, which can be connected to the PROFINET bus as a ProFINET-IO slave station.

The instrument IP address can be viewed in the Data-Trans - NetCOM - IP Config; MAC address in the Maintenance - System info -MAC address item to view.

3.7.1 I/O Status

The **GMC-X1LF** provides multi-byte **IO**, output in two modules, through which the master station can **read and** control the status of the weigh display. In PN communication mode, two sets of IO module addresses are provided: standard version and simple version. Through the Data-Trans parameters - the GSD Type can choose corresponding version. The IO module addresses of the two versions are as follows:

11.7.1.1 I/O Module address of the Standard version

Module 1: Weight and status parameters (read register)

Offset	Parameter name	Data type	Parameter Description
0	Displayed weight	**DInt**	Currently displayed Weight, integer
4	Weight Of Reduction method	**DInt**	Reduction method running weight, integer type
8	Weight status flag bit	**Word**	D13-D15 Reserve
			D12: Bipolar
			D11: Calculate weight by using theoretical values, (prompt user when calculating weight using theoretical value)
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption beyond expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable,(millivolt stable sign when calibration)
			D7: Loadcell negative overflow, lower than the loadcell voltage allowed range
			D6: Loadcell positive overflow, beyond the loadcell voltage allowable range
			D5: Weight negative overflow, weight less than "-(Max range +**9d**)"

			D4: Weight positive overflow, weight greater than "Max range +**9d**"
			D3: Overflow status, (abnormal weight or loadcell)
			D2: display weight is negative
			D1: zero, (weight in **the** range of 0+/- 1/4 **d)**
			D0: Stable
10	Error code **1**	**Word**	D13-D15 Reserved
			D12: Remote calibration When disabled
			D11: In hardware protection during calibration
			D10: The previous weight point is not calibrated
			D9: Beyond minimum resolution (less than 0.1uV **per division)**
			D8: Weight input exceeds the maximum range
			D7: The weight input cannot be zero
			D6: Weight calibration is less than zero or the previous calibration point
			D5: The loadcell positive overflow during weight calibration
			D4: The loadcell negative overflow during weight calibration
			D3: Weight calibration is unstable
			D2: Loadcell positive overflow during zero calibration
			D1: Loadcell negative overflow during zero calibration
			D0: zero calibration is unstable
12	Error code **2**	**Word**	**D15** Reserve
			D14: Disable zero when run
			D13: The remote tare operation allow switch is not enabled during remote tare operation
			D12: The tare is not allowed in the net weight state
			D11: The weight is negative when taring
			D10: The loadcell positive overflow when taring
			D09: The loadcell negative overflow when taring
			D08: Unstable when taring
			D07: Does not allow zero in net weight status
			D06: The remote zero switch is not enabled during remote zero
			D05: The loadcell positive overflow when zeroing
			D04: The loadcell negative overflow when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: Power-on zero unstable
			D00: Power-on zero out of range
14	Process status flag bit	**Word**	D10-D15 Reserve
			D9: **IO** test status
			D8: Printing, (valid when instrument perform a printing operation)
			D6-D7: Reserved
			D5:1: Pause
			D4:1: Slow Stop
			D3:1: Supply material
			D2:1: Lack material
			D1: Lower level
			D0: Upper level
16	Process status flag bit **2**	**Word**	**D15**: Wait for the stop signal
			D14: Zero Zone**:1**

			D13: Nozzle Down:**1**, Nozzle Up: **0**
			D12: Push bucket
			D11: normal filling liquid completed (valid after waiting, zero after starting filling liquid again)
			D10: Alarm
			D9: Weigh OK
			D8: Waiting
			D7: Under Replenish Material
			D6: Under
			D5: Over
			D4: Fine Feed
			D3: Medium Feed
			D2: Coarse Feed
			D1: Before Feeding
			D0: Run: 1, Stop: 0
18	Status Tips	**Word**	**0-** No action 1- Bump bucket 2- Wait for the start signal 3- Wait for the lower level 4- Delay 5- Coarse Feed 6- Medium Feed 7- Fine Feed 8- Free fall delay 9- Free fall correction 10- Over/under 11- Under replenish 12- Over/under Pause 13- Raise nozzle 14- Waiting 15- Weigh OK 16- Pushing bucket 17- Wait for stop 18- Pause 19- Batches completed
20	Process alarm	**Word**	D13-D15 Reserve
			D12: Batches complete alarm
			D11: Do not allow filling liquid (reduction method, the current weight **is** below the lower limit of the material level**,** in the supply material state)
			D10: The material level is not set properly
			D9: Decrement protection
			D8: material leakage, when the coarse feeding flow is lower than the lower limit of coarse feeding flow, the instrument has the default material leakage, the instrument output buzzer alarm, the main interface prompts the material leakage, and stops
			D7: Over/under pause
			D6: Over/under
			D5: Tare detection error
			D4: Bump Bucket
			D3: OFL when starting
			D2: The gun/gun lifting function is not defined, use the step raise nozzle function
			D1: There is an undefined IO in the IO module that must be defined
			D0: Formula setting unreasonable alarm
24	Gross Weight	**DInt**	Gross weight value, signed, integer

28	Net weight	**DInt**	Net weight value, signed, integer
32	Tare	**DInt**	Tare, signed, integer
36	Current weight	**Float**	Current weight value, floating point type
40	Gross weight	**Float**	Gross weight value, floating point type
44	Net weight	**Float**	Net weight value, floating point type
48	Tare	**Float**	Tare value, floating point type
52	Code in **AD** after filtering	**DWord**	Inside code of the **ADC** after filtering
56	Loadcell voltage value data	**DWord**	Signed numbers, integers, four decimal points
60	Relative zero voltage value data	**DWord**	Signed numbers, integers, four decimal points
64	System accumulates higher 6 digits	**DWord**	Unsigned number, integer
68	System accumulates lower 9 digits	**DWord**	Unsigned number, integer
72	System count	**DWord**	Unsigned number, integer
76	Formula weight 6 point higher	**DWord**	Unsigned number, integer
80	Formula weight 9 point lower	**DWord**	Unsigned number, integer
84	Formula ACUM Times	**DWord**	Unsigned number, integer
88	Waiting weight	**DWord**	Unsigned number, integer
92	Input status area	**Word**	**D5-D15**: Reserved
			D2: Input **5** status (extended input **2**)
			D1: Input **4** status (extended input **1**)
			D0: Input **3** status
			D1: Input **2** status
			D0: Input **1** status
94	Output status area	**Word**	D9-D15 Reserved
			D8: Output **9** status (extended output **4**)
			D7: Output **8** status (extended output **3**)
			D6: Output **7** status (extended output **2**)
			D5: Output **6** states (extended output **1**)
			D4: Output **5** status
			D3: Output **4** status
			D2: Output **3** status
			D1: Output **2** status
			D0: Output **1** status
96	Communication heartbeat	**DWord**	When PN communicates, the value of the communication heartbeat is converted between 0 and 1 at a frequency of 1 Hz.

Module 2: Calibration parameters (Read/write register)

Offset	Parameter name	Data type	Instructions
0	Automatically Obtain zero point	**DWord**	Current Loadcell voltage
4	Gain Calibration point **1**	**DWord**	Relative voltage value **1** (loadcell input - zero point voltage)
8	Gain Calibration point **2**	**DWord**	Relative voltage value **2** (loadcell input - Calibration point **1** voltage)
12	Gain Calibtation point **3**	**DWord**	Relative voltage value **3** (loadcell input - Calibration point **2** voltage)

16	Gain Calibration point **4**	**DWord**	Relative voltage value **4** (loadcell input - Calibration point **3** voltage)
20	Gain Calibration point **5**	**DWord**	Relative voltage value **5** (Loadcell input - Calibration point **4** voltage)
0	Automatically Obtain zero point	**DWord**	Current Loadcell voltage (write 1 to communication address, perform automatic zero calibration)
4	Gain Calibration point **1**	**DWord**	Input gain weight value **1**
8	Gain Calibration point **2**	**DWord**	Input gain weight value **2**
12	Gain Calibration point **3**	**DWord**	Input gain weight value **3**
16	Gain Calibration point **4**	**DWord**	Input gain weight value **4**
20	Gain Calibration point **5**	**DWord**	Input gain weight value **5**
24	Function operation	**DWord**	D18-D31 Reserved
			D18: Clear cumulative
			D17: Run once manually
			D16: Manual Fine Feed
			D15: Manual Coarse Feed
			D14: Lower nozzle complete
			D13: Tare and start filling
			D12: Select recipe
			D11: Clear alarm
			D10: Pause
			D9: Emergency stop
			D8: Slow stop
			D7: Start
			D6: Print feed paper
			D5: Print
			D4: Calibrate zero
			D3: Gross/Net weight switch
			D2: Clear Tare
			D1: Tare
			D0: Zero

Module 3: Parameter modification (read/write register)

0	Read out values	DWord	The master station requests the data returned by the instrument, the value obtained according to the "address requested to read"
4	The write status	Word	Write the state of the data return 0: No error 1: Register address is illegal 2: parameter error
6	Read status	Word	Read the status of the data returned 0: No error 1: The register address is illegal 2: parameter error
0	Request to write the value modbus address	DWord	Modbus write operation address (note that no write is written when the address changes), this parameter modifies the range of MODBUS addresses supported by the interface module only to 0100-02119
4	Input data	DWord	Write this data to the "modbus address of the requested value" (note that it will only be written to the instrument if the value has changed)
8	The address of the requested read	DWord	Modbus read operation address (note that you cannot read two-byte addresses, write an odd-numbered address). This parameter modifies the range of MODBUS addresses supported by the interface module only to 0000-02119

11.7.1.2 I/O Module Address Lite

PN Loop parameter list

Offset	Parameter name	Data type	Parameter Description
Read register (I address)			
0	Displayed weight	**DInt**	Weight currently displayed, integer
4	Weight status flag bit	**Word**	D13-D15 Reserved
			D12: Bipolar
			D11: Calculate weight using theoretical values, (prompt user when calculating weight using theoretical values)
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption longer than expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable, (millivolt stable sign when calibrating)
			D7: loadcell negative overflow, lower than the loadcell voltage allowed range
			D6: loadcell positive overflow, beyond the allowable range of loadcell voltage
			D5: Weight negative overflow, weight less than "-(Max range +**9d**)"
			D4: Weight positive overflow, weight greater than "Max range +**9d**"
			D3: Overflow status, (abnormal weight or loadcell)
			D2: Displayed weight is negative,
			D1: zero, (weight in **the** range of 0+/- quarter **d)**
			D0: Stable
6	Error code **1**	**Word**	D13-D15 Reserved
			D12: Remote calibration when disabled
			D11: In hardware protection when calibration
			D10: The previous weight point is not calibrated
			D9: Beyond minimum resolution (less than 0.1uV per division)
			D8: Weight input exceeds the maximum range
			D7: The weight input cannot be zero
			D6: Weight calibration is less than zero or the previous calibration point
			D5: The loadcell negative overflow during weight calibration
			D4: The loadcell negative overflow during weight calibration
			D3: Weight calibration is unstable
			D2: Loadcell positive overflow when zero calibration
			D1: Loadcell negative overflow when zero calibration
			D0: zero calibration is unstable
8	Error code **2**	**Word**	**D15** Reserved
			D14: Forbid zero when running
			D13: The remote tare operation allow switch is not enabled during remote tare operation
			D12: The tare is not allowed in the net weight state
			D11: The weight is negative when taring
			D10: The loadcell positive overflow when taring
			D09: The loadcell negative overflow when taring
			D08: Unstable when taring
			D07: The net weight status does not allow zeroing

			D06: The remote zero switch is not enabled when remote zero
			D05: The loadcell positive overflow when zeroing
			D04: The loadcell negative overflow when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: Unstable when power-on zero
			D00: Power-on zero is out of range
10	Process status flag bit	**Word**	**D15**: Wait for the stop signal
			D14: Zero Zone**:1**
			D13: Lower Nozzle :**1**, Raise nozzle: **0**
			D12: Push the bucket
			D11: normal liquid filling completed (valid after waiting, zero after starting liquid filling again)
			D10: Alarm
			D9: Weigh OK
			D8: Waiting
			D7: Under Replenish
			D6: Under
			D5: Over
			D4: Fine Feed
			D3: Medium Feed
			D2: Coarse Feed
			D1: Before feeding
			D0: Run: 1, Stop: 0
12	Alarm	**Word**	**D15** Reserved
			D14: Write data return status, 0 write success; 1 write failed
			D13: When PN is communicating, the value of the communication heartbeat switches between 0 and 1 at a frequency of 1 Hz.
			D12: Batches completes alarm
			D11: Not allowed to start when Start
			D10: Material level setting is not reasonable
			D9: Decrement protection
			D8: material leakage, when the coarse feeding flow is lower than the lower limit of coarse feeding flow, the instrument has the default material leakage, the instrument output buzzer alarm, the main interface prompts the material leakage, and stops
			D7: Over/under Pause
			D6: Over
			D5: Tare detection error
			D4: Bucket bump
			D3: OFL when starting
			D2: Lower nozzle/Raise nozzle function not defined, use step raise nozzle function
			D1: There is an undefined IO in the IO module that must be defined
			D0: Formula setting unreasonable alarm
14	Read out value	**DWord**	The master station requests the data returned by the instrument, the value obtained according to the "address requested to read"
Write register (Q address)			
0	Function operation	**DWord**	D18-D31 Reserved
			D18: Clear cumulative
			D17: Run once manually

			D16: Manual fine feed
			D15: Manual coarse feed
			D14: Lower Nozzle complete
			D13: Taring and liquid filling begins
			D12: Select recipe
			D11: Clear alarm
			D10: Pause
			D9: Emergency stop
			D8: Slow stop
			D7: Start
			D6: Print feed paper
			D5: Print
			D4: Calibrate zero
			D3: Gross/net weight switch
			D2: Clear tare
			D1: Tare
			D0: Zero
4	Request to write the value **modbus** address	**DWord**	**Modbus** write operation address (note that not written when the address changes), this parameter modifies the range of MODBUS addresses supported by the interface module only to **0100-02119**
8	Input data	**DWord**	Write this data to the "**modbus** address of the requested value" (note that it will only be written to the instrument if the value has changed)
12	The address of the requested read	**DWord**	**Modbus** read operation address (note that you cannot read two-word addresses, write an odd-numbered address). This parameter modifies the range of MODBUS addresses supported by the interface module only **to 0000-02119**

3.7.2 Device Description file GSD

The device description file and connection method of GMC-X1LF can be downloaded from the website of Shenzhen General Measure Technology Co., LTD. (www.gmweighing.com).

3.8 EtherNet-IP Communication

Instrument IP address in the communication setting - network port communication - the local IP address item set and view, after setting to re-power on to take effect. MAC address in the system maintenance - System information -MAC address item to view.

3.8.1 I/O Status

GMC-X1LF provides multi-byte **IO** through which the master station can read and control the status of the weigh display.

Module 1: Read the register area

Offset	Parameter name	Data type	Parameter Description
Weight and status bits, read register			
0	Displyed weight	**DInt**	Weight currently displayed, integer
2	Displayed running weight	**DInt**	Decrement method weight

4	Weight status flag bit	**Word**	D13-D15 Reserved
			D12: Bipolar, (flag bits are valid when bipolar is selected)
			D11: Calculate the weight using the theoretical value, (prompt the user when calculating the weight using the theoretical value)
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption longer than expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable, (when calibration millivolt stable sign)
			D7: loadcell negative overflow, lower than the loadcell voltage allowed range
			D6: loadcell positive overflow, beyond the allowable range of loadcell voltage
			D5: Weight negative overflow, weight less than "-(Max range +**9d**)"
			D4: Weight positive overflow, weight greater than "Max range +**9d**"
			D3: Overflow status, (abnormal weight or loadcell)
			D2: Displayed weight negative sign, (means weight is negative)
			D1: zero, (weight in **the** range of 0+/- quarter **d)**
			D0: Stable
5	Error code **1**	**Word**	D13-D15 Reserved
			D12: Remote calibration when disabled
			D11: In hardware protection at calibration
			D10: The previous weight point is not calibrated
			D09: Beyond minimum resolution (less than 0.1uV **per division)**
			D08: Weight input exceeds maximum range
			D07: The weight input cannot be zero
			D06: Weight calibration is less than zero or the previous calibration point
			D05: The loadcell is overflowing during weight calibration
			D04: Loadcell negative overflow during weight calibration
			D03: Weight calibration is unstable
			D02: Loadcell overflow during zero calibration
			D01: Loadcell negative overflow during zero calibration
			D00: zero calibration is unstable
6	Error code **2**	**Word**	D14-D15 Reserved
			D13: Remote tare operation allow switch is not turned on during remote tare operation
			D12: Not allow taring in the net weight state
			D11: The weight is negative overflow when the taring
			D10: The loadcell is positive overflow when taring
			D09: The loadcell negative overflow when taring

			D08: Unstable when taring
			D07: Does not allow zeroing in net weight status
			D06: The remote zero switch is not enabled during remote zero
			D05: The loadcell positive overflow when zeroing
			D04: The loadcell negative overflow when zeroing
			D03: Unstable when zeroing
			D02: zero out of range
			D01: power-on zero unstable
			D00: power-on zero out of range
7	Process status flag bit	**Word**	D10-D15 Reserved
			D9: **indicates the I**/O test status
			D8: Printing, (valid when the instrument is performing a printing operation)
			D6-D7: reserved
			D5:1: Pause
			D4:1: Pause
			D3:1: Supply Material
			D2:1: Lack Material
			D1: lower level
			D0: Upper level
8	Process status flag bit 2	**Word**	**D15**: Wait for the stop signal
			D14: Zone Zero: 1
			D13: Lower Nozzle: 1, lift gun: 0
			D12: Push bucket
			D11: Normal liquid filling completed (valid after waiting, zero after starting filling again)
			D10: Alarm
			D9: Weigh OK
			D8: Waiting
			D7: Under Replenish
			D6: Under
			D5: Over
			D4: Fine Feed
			D3: Medium Feed
			D2: Coarse Feed
			D1: Before Feeding
			D0: Run **:1,** Stop **:0**
9	Status Tips	**Word**	**0-** No action 1- Raise bucket 2- Wait for the start signal 3- Wait for the Lower level 4- Delay 5- Coarse Feed 6- Medium Feed 7- Fine Feed 8- Free Fall delay 9- Drop correction 10- Over/Under 11- Under replenish 12- Over/under Pause 13- Raise nozzle

			14- Waiting 15- Weigh OK 16- Pushing bucket 17- Waiting to stop 18- Pause 19- Batches complete
10	Process alarm	**DWord**	D12-D15 Reserved
			D12: Batch complete alarm
			D11: Do not allow filling (reduction method, the current weight **is** below the lower limit of the material level**,** in the feeding state)
			D10: The material level is not set properly
			D9: Decrement protection
			D8: material leakage, when the coarse feeding flow is lower than the lower limit of rapid feeding flow, the instrument has the default material leakage, the instrument output buzzer alarm, the main interface prompts the material leakage, and stops
			D7: Over/under Pause
			D6: Over/Under
			D5: Tare detection error
			D4: Bump Bucket
			D3: OFL when starting
			D2: Lower nozzle/raise nozzle function not defined, use step raise nozzle function
			D1: There is an undefined IO in the IO module that must be defined
			D0: Formula setting unreasonable alarm
12	Gross Weight	**DInt**	Gross weight value (signed integer)
14	Net weight	**DInt**	Net weight value (signed integer)
16	Tare	**DInt**	Tare value (signed integer)
18	Current weight	**Float**	Weight currently displayed, floating point type
20	Gross weight	**Float**	Gross weight value, floating point type
22	Net weight	**Float**	Net weight value, floating point type
24	Tare	**Float**	Tare value, floating point type
26	Code in **AD** after filtering	**DWord**	Inside code of the **ADC** after filtering,
28	loadcell voltage value data	**DWord**	Signed numbers, integers, four decimal points
30	Relative zero voltage value data	**DWord**	Signed numbers, integers, four decimal points
32	System accumulates high **6** digit	**DWord**	Unsigned number, integer
34	System accumulates low **9** digit	**DWord**	Unsigned number, integer
36	System ACUM Times	**DWord**	Unsigned number, integer

38	Formula weight high **6** points	**DWord**	Unsigned number, integer
40	Formula weight low **9** points	**DWord**	Unsigned number, integer
42	Recipe ACUM Times	**DWord**	Unsigned number, integer
44	Waiting weight	**DWord**	Unsigned number, integer
46	Input status area	**Word**	D5-D15 Reserved
			D4: Input **5** status (extended input **2**)
			D3: Input **4** status (extended input **1**)
			D2: Input **3** status
			D1: Input **2** status
			D0: Input **1** status
47	Output status area	**Word**	D9-D15 Reserved
			D8: Output **9** status (extended output **4**)
			D7: Output **8** status (extended output **3**)
			D6: Output **7** status (extended output **2**)
			D5: Output **6** states (extended output **1**)
			D4: Output **5** status
			D3: Output **4** status
			D2: Output **3** status
			D1: Output **2** status
			D0: Output **1** status
48	Communication heartbeat	**DWord**	After the communication indicator is set to the network port, the communication indicator blinks at **1HZ**. When the **EIP** communicates, the value of the communication heartbeat switches between **0** and **1 at a frequency of 1 Hz**.
Calibrate and read the register			
50	Automatic zero acquisition	**DWord**	Current loadcell voltage
52	Gain calibration point **1**	**DWord**	Relative voltage value **1** (loadcell input - zero point voltage)
54	Gain calibration point **2**	**DWord**	Relative voltage value **2** (loadcell input - calibration point **1** voltage)
56	Gain calibration point **3**	**DWord**	Relative voltage value **3** (loacell input - calibration point **2** voltage)
58	Gain calibration point **4**	**DWord**	Relative voltage value **4** (loadcel input - calibration point **3** voltage)
60	Gain calibration point **5**	**DWord**	Relative voltage value **5** (loadcell input - calibration point **4** voltage)
Parameter modification, read register			
62	Read value	**DWord**	The master station requests the data returned by the instrument, the value obtained according to the "address requested to read"
64	Write status	**Word**	Write the status of the data return 0: No error 1: the register address is invalid 2: the parameter is incorrect
65	Read status	**Word**	Read the status of the data returned 0: No error 1: The register address is illegal 2: parameter

			error

Module 2: Write register area

Calibration area			
0	Automatically Obtain zero	**DWord**	Current loadcell voltage
2	Gain calibration point **1**	**DWord**	Input gain weight value **1**
4	Gain calibration point **2**	**DWord**	Input gain weight value **2**
6	Gain calibration point **3**	**DWord**	Input gain weight value **3**
8	Gain calibration point **4**	**DWord**	Input gain weight value **4**
10	Gain calibration point **5**	**DWord**	Input gain weight value **5**
Function operation			
12	Functional operation	**DWord**	D18-D31 Reserved
			D18: Clear ACUM
			D17: Run once manually
			D16: Manual Fine feed
			D15: Manual Coarse feed
			D14: Lower nozzle completed
			D13: Taring and filling begins
			D12: Select recipe
			D11: Clear alarm
			D10: Pause
			D9: Emergency stop
			D8: Slow stop
			D7: Start
			D3: Gross/net weight switch
			D2: Clear Tare
			D1: Remove the tare
			D0: Zero
Parameter modification			
14	Request to write the value **modbus** address	**DWord**	**Modbus** write operation address (note that the MODBUS write operation will not be written when the address changes.) This parameter modifies the modbus address range supported by the interface module only from **0100 to 02119**
16	Input data	**DWord**	Write this data to the "**modbus** address of the requested value" (note that it will only be written to the instrument if the value has changed)
17	The address of the requested read	**DWord**	**Modbus** read operation address (note:cannot read two-word addresses, write an odd-numbered address). This parameter modifies the range of MODBUS addresses supported by the interface module only from **0100 to 02119**

3.8.2 Device description file EDS

EDS and connection methods of GMC-X1LF can be downloaded from the website of Shenzhen General Measure Technology Co., LTD. (www.gmweighing.com).

3.9 EtherCAT Communication

GMC-X1LF has two bus connection ports: NET1 and NET2. Any computer with a network interface card and embedded devices with Ethernet control can be used as a master station for EtherCAT, such as devices such as Huichuan PLC. The instrument can also be connected via Twincat software on a PC computer, in any case within the same local area network as the instrument. The following parameter table can be operated if the connection is successful.

3.9.1 Bus Settings

When the order is equipped with **EtherCAT** extension, **enter** the menu and press the left button to display the bus setting "EtherCAT", you can set the following parameters

EtherCAT	Initial value	Instructions
Site alias	**00001**	Range: **0-65535**
Write Switch	Disable	Range: Disable/Enable; Acyclic parameters can be written only after they are turned on.

3.9.2 Cyclic parameter address

GMC-X1LF EtherCAT communication provides multi-byte **IO,** output in two modules**,** through which the master station can read and control the status of the weigh indicator.

Offset	Parameter name	Data type	Parameter Description
Weight and status bits, read register			
0	Displayed weight	**Float**	Weight currently displayed, floating point type
4	Real-time weight	**Float**	The weight of the subtractive method run, floating point type
8	Weight status flag bit	**Word**	**D15:** Communication heartbeat
			D13-D14 reserved
			D12: Bipolar
			D11: Calculate weight using theoretical values, (prompt user when calculating weight using theoretical values)
			D10: **ADC** failure, (**ADC** initialization failure or sampling interruption longer than expected)
			D9: Currently displayed net weight, (distinguish which weight is currently displayed)
			D8: millivolt stable, (when calibration millivolt stable sign)
			D7: loadcell negative overflow, lower than the loadcell voltage allowed range
			D6: loadcell positive overflow, beyond the loadcell voltage allowable range
			D5: Weight negative overflow, weight less than "-(Max range +**9d**)"
			D4: Weight positive overflow, weight greater than "Max range +**9d**"
			D3: Overflow condition, (abnormal weight or loadcell)
			D2:Displayed weight negative sign, (Displayed weight negative)

			D1:Zero, (weight in the range of 0+/- quarter **d)**
10	Error code **1**	**Word**	D13-D15 Reserved
			D12: Remote calibration when disabled
			D11: In hardware protection during calibration
			D10: The previous weight point is not calibrated
			D9: Beyond minimum resolution (less than 0.1uV **per division)**
			D8: Weight input exceeds the maximum range
			D7: The weight input cannot be zero
			D6: Weight calibration is less than zero or the previous calibration point
			D5: Loadcell positive overflowing during weight calibration
			D4: Loadcell negative overflow during weight calibration
			D3: Weight calibration is unstable
			D2: Loadcell positively overflows during zero calibration
			D1: loadcell negatively overflow during zero calibration
			D0: zero calibration is unstable
12	Error code **2**	**Word**	**D15** Reserved
			D14: Run Forbid zero
			D13: The remote tare operation allow switch is not enabled during remote tare operation
			D12: The tare operation is not allowed in the net weight state
			D11: The weight negative overflow when taring
			D10: Loadcell positive overflow when taring
			D09: Loadcell negative overflow when taring
			D08: Unstable when taring
			D07: The net weight status does not allow zeroing
			D06: The remote zero switch is not enabled during remote zero
			D05: The loadcell positively overflow when zeroing
			D04: The loadcell neagatively overflow when zeroing
			D03: Unstable when zeroing
			D02: Zero out of range
			D01: Power-on zero is unstable
14	Process status flag bit 1	**Word**	D10-D15 Reserved
			D9: **IO** test status
			D8: Printing, (valid when the instrument is performing a printing operation)
			D6-D7: reserved
			D5:1: Pause
			D4:1: Slow Stop
			D3:1: Supply material
			D2:1: Lack material
			D1: Lower level
			D0: Upper level
16	Flow status flag bit **2**	**Word**	**D15**: Wait for the stop signal
			D14: Zero Zone**:1**

			D13: Lower nozzle:**1**, Raise nozzle: **0**
			D12: Push bucket
			D11: normal liquid filling completed (valid after setting value, zeroing after starting filling again)
			D10: alarm
			D9: Weigh OK
			D8: Waiting
			D7: Under Replenish
			D6: Under
			D5: Over
			D4: Fine Feed
			D3: Medium Feed
			D2: Coarse Feed
			D1: Before feeding
			D0: Run: 1, Stop: 0
18	Status Tips	**Word**	**0-** No action 1- load bucket 2- Wait for the start signal 3- Wait for the low level 4- Delay 5- Coarse Feed 6- Medium Feed 7- Fine Feed 8- Free Fall delay 9- Free Fall correction 10- Over/under 11- Under Replenish 12- Over/under pause 13- Raise nozzle 14- Waiting 15- Weigh OK 16- Pushing bucket 17- Waiting to stop 18- Pause 19- Batches completed
20	Process alarm	**Word**	D13-D15 Reserved
			D12: Batches complete alarm
			D11: Do not allow filling (reduction method, the current weight **is** below the lower limit of the material level**,** in the feeding state)
			D10: The material level is not set properly
			D9: Decrement protection
			D8: material leakage, when the coarse feeding flow is lower than the lower limit of coarse feeding flow, the instrument has the default material leakage, the instrument output buzzer alarm, the main interface prompts the material leakage, and stops
			D7: Over pause
			D6: Over/Under
			D5: Tare detection error
			D4: Bucket bump
			D3: OFL when starting

			D2: Lower nozzle/Raise nozzle function not defined, use step raise nozzle function
			D1: There is an undefined IO in the IO Module that must be defined
			D0: Formula setting unreasonable alarm
22	Target Value	**Float**	Range: 0~ Max range; The measured value per buckt during the cumulative process.
26	Coarse Reserve	**Float**	Range: 0~ Max range; In the process of measurement, if the weighing value≥ the target value – Coarse Reserve, then close Coarse Feeding
30	Medium Reserve	**Float**	Range: 0~ maximum range; If the output IO is defined, in the measurement process, if the weighing value≥ the target value – Medium Reserve, then close Medium Feeding
34	Free Fall	**Float**	Range: 0~ Max range; In the measurement process, if the weighing value ≥ the target value – Free Fall, then close fine Feeding
38	Upper limit Material level	**Float**	Instrument when stopping liquid filling, if feeding, stop feeding when this level is reached. (Note: when the scale structure is multi-head reduction, the parameter can be set)
42	Lower limit of material level	**Float**	When instrument stopping filling, if the material weight in the storage hopper is less than this lower limit, the feed output is valid(this lower limit must be greater than the filling target value, that means it must supply material when it is insufficient to fill the next bucket). (Note: when the scale body structure is multi-head reduction, the parameter can be set)
46	Read out value	**DWord**	The master station requests the data returned by the instrument, the value obtained according to the "address requested to read"
22	Target value	**Float**	Range: 0~ Max range; The measured value per irrigation during the cumulative process.
26	Coarse Reserve	**Float**	Range: 0~ Max range; In the process of measurement, if the weighing value ≥ the target value – coarse reserve, then close the coarse feeding
30	Medium Reserve	**Float**	Range: 0~ Max range; If the output IO is defined, in the measurement process, if the weighing value ≥ the target value – Medium Reserve, then close Medium Feed
34	Free Fall	**Float**	Range: 0~ Max range; In the measurement process, if the weighing value≥ the target value – Free Fall, then close fine feeding
38	Upper limit of material level	**Float**	when instrument stopping filling, if feeding, stop feeding when this level is reached. (Note: when the scale body structure is multi-head reduction, the parameter can be set)
42	Lower limit of material level	**Float**	When instrument stopping filling, if the material weight in the storage hopper is less than this lower limit, the feed output is effective (this lower limit must be greater than the filling target value, that means it must be supply material when it is insufficient to fill the next bucket). (Note: when the scale body structure is multi-head reduction, the parameter can be set)

46	Read out value	**DWord**	The master station requests the data returned by the instrument, the value obtained according to the "address requested to read"
20	Process alarm	**Word**	D13-D15 Reserved
40	Formula weight low **9** points	**DWord**	**D12:** Batches complete alarm
42	Recipe ACUM Times	**DWord**	**D11:** Do not allow filling (decrement method, current weight below lower limit of material level**,** in feeding state)
44	Waiting weight	**DWord**	**D10:** Material level set improperly
Write register (Q address)			
0	Function operation	**DWord**	D18-D31 Reserve
			D18: Clear cumulative
			D17: Run once manually
			D16: Manual Fine Feed
			D15: Manual Coarse Feed
			D14: Lower Nozzle Complete
			D13: Taring and Start Liquid filling
			D12: Select recipe
			D11: Clear alarm
			D10: Pause
			D9: Emergency stop
			D8: Slow stop
			D7: Start
			D6: Print Feed paper
			D5: Print
			D4: Zero Calibration
			D3: Gross/net weight switch
4	Target value	**Float**	Range: 0~ Max range; The measured value per bucket during the cumulative process.
8	Coarse Reserv e	**Float**	Range: 0~ Max range; In the process of measurement, if the weighing value ≥ the target value – coarse reserve, then close coarse feeding
12	Medium Reserve	**Float**	Range: 0~ Max range; If the output is defined, in the measurement process, if the weighing value ≥ the target value – medium reserve, then close medium feeding
16	Free Fall	**Float**	Range: 0~ Max range; In the measurement process, if the weighing value≥ the target value – Free Fall, then close fine feeding
20	Upper limit of material level	**Float**	When the instrument stops filling, if the feed is performed, the feed stops when this level is reached. (Note: when the scale structure is multi-head reduction, the parameter can be set)
24	Lower limit of material level	**Float**	When the instrument stops filling liquid, if the material weight in the storage hopper is less than this lower limit, the feed output is effective (this lower limit must be greater than the filling target value, that means it must be supply material when it is insufficient to fill the next bucket). (Note: when the scale structure is multi-head reduction, the parameter can be set)

28	Gain calibration	**Float**	Write the weight value to the calibration weight calibration point **1**
32	Request the written value **modbus** address	**DWord**	**Modbus** write operation address (note that no write is written when the address changes), this parameter modifies the range of MODBUS addresses supported by the interface module only to **0100-02119**
36	Input data	**DWord**	Write this data to the "**modbus** address of the requested value" (note that it will only be written to the instrument if the value has changed)
40	The address of the requested read	**DWord**	**Modbus** read operation address (note that cannot read two-word addresses, write an odd-numbered address). The MODBUS address range supported by the interface module is limited to **0000-02119**

3.9.3 Acyclic parameter addresses

Parameter names	Parameter Description		Index
Power on zero range	0	Range: 0~99(* full Scale %)	4000:1
Zero tracking range	1	0-99d	4000:2
Stable range	1	0-99d	4000:3
Zero range	20%	Range: 1~99(* full scale %)	4000:4
Digital filter parameters	4	0-9	4000:5
Steady filtering	0	0-99	4000:6
Units	kg	g,kg,t,lb	4000:7
Decimal point	0	Range: 0; 0.0; 0.00; 0.000; 0.0000	4000:8
Minimum division	d=1	Instrument indicates the minimum change in value	4000:9
Maximum range	10000	Range: 1,2,5,10,20,50,100,200,500	4000:10

3.9.4 Device description file ESI

The Equipment description file of **GMC-X1LF** and the detailed steps for using **PLC** and **Twincat** are available for **download** from the website of Shenzhen General Measure Technology Co., LTD. **(**(www.gmweighing.com).