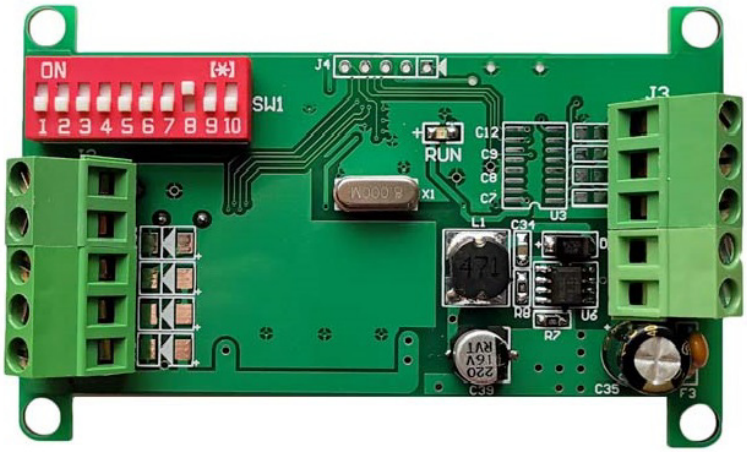
# Giant521
# Weighing Transmitter
# User Manual



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# 1 Customer Support

Thank you very much for your order. Our success comes from the continuous faith in the excellence of our products and services, something we are committed to and would never sacrifice. Our customer service, especially in the after sales phase, guarantees the satisfaction of our clients. In line with this strategy, we appreciate that you can share with us your feedback at any time for our improvement, be it positive or negative, so if we can serve you better in anyway, please do inform us.

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# 2 Introduction

Giant521 weighing transmitteris integrated with 1 independent weighing channel, serial communication port RS485 or RS232 (Modbus-RTU protocol),to achieve high speed data acquisition. It employs high speed precision AD convertor to achieve high resolution and wide dynamic range with low zero drift and temperature coefficient. It can be integrated with DCS,HMI,PLC and other control systems easily through its RS485 or RS232 interface using Modbus-RTU protocol. It can be used for hopper scale, platform balance, tensile testing machine, compression testing machine etc., and all kinds of testing system with strain gauge sensor.

- Single weighing channel with high accuracy conversion
- RS485 or RS232 interface with Modbus-RTU protocol
- Digital Filter and Anti-Vibration Filter
- Power down preservation for parameters
- Zero tracking and auto zero on start up
- Watchdog to guarantee the system stability
- Protected by Aluminum Die Casting Enclosure

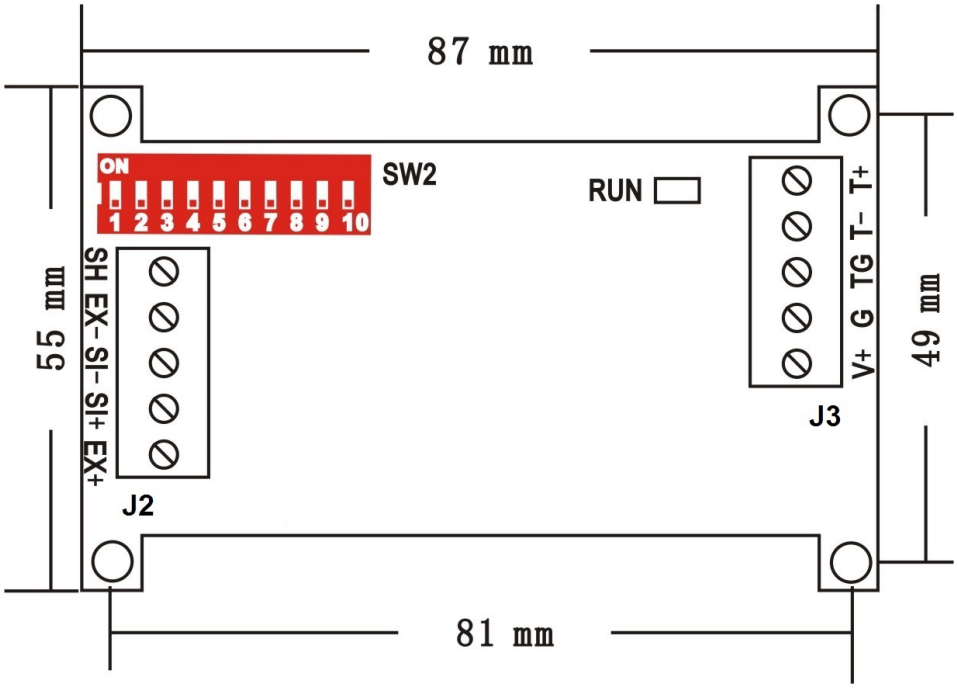
# 3 Technique Parameters

| Parameters | |
|---|---|
| Power Supply | 9-30VDC DC, 1W @ 24VDC |
| Weighing | Channel:Single weighing channel<br>Sensor Type:4/6 wire strain gauge<br>Excitation:+5V DC,60mA Max. for each channel<br>Sampling rate: 100Hz/50Hz/25Hz/12.5Hz/6.25Hz<br>Input range: ±30mV<br>Resolution: 1/100000<br>Sensitivity:0.25uV/d<br>Nonlinearity:±0.001％FS<br>Temperature Drift:<±5ppm/℃ |
| Display panel | None |
| RS-485 or RS232 | TVS and Over Current protection<br>Modbus-RTU protocol |
| Dimension | PCBA: 87*55*25 mm<br>Aluminum Die Casting Enclosure: |
| Storage | -40~85℃,10%~95% |
| Operation | -10~45℃,10%~95% |
| Installation and IP ratings | PCBA: Screw fixing, IP00<br>Aluminum Die Casting Enclosure: Screw fixing, IP54 |

# 4 Dimension, Wiring and Ordering Information

## 4.1 Dimension

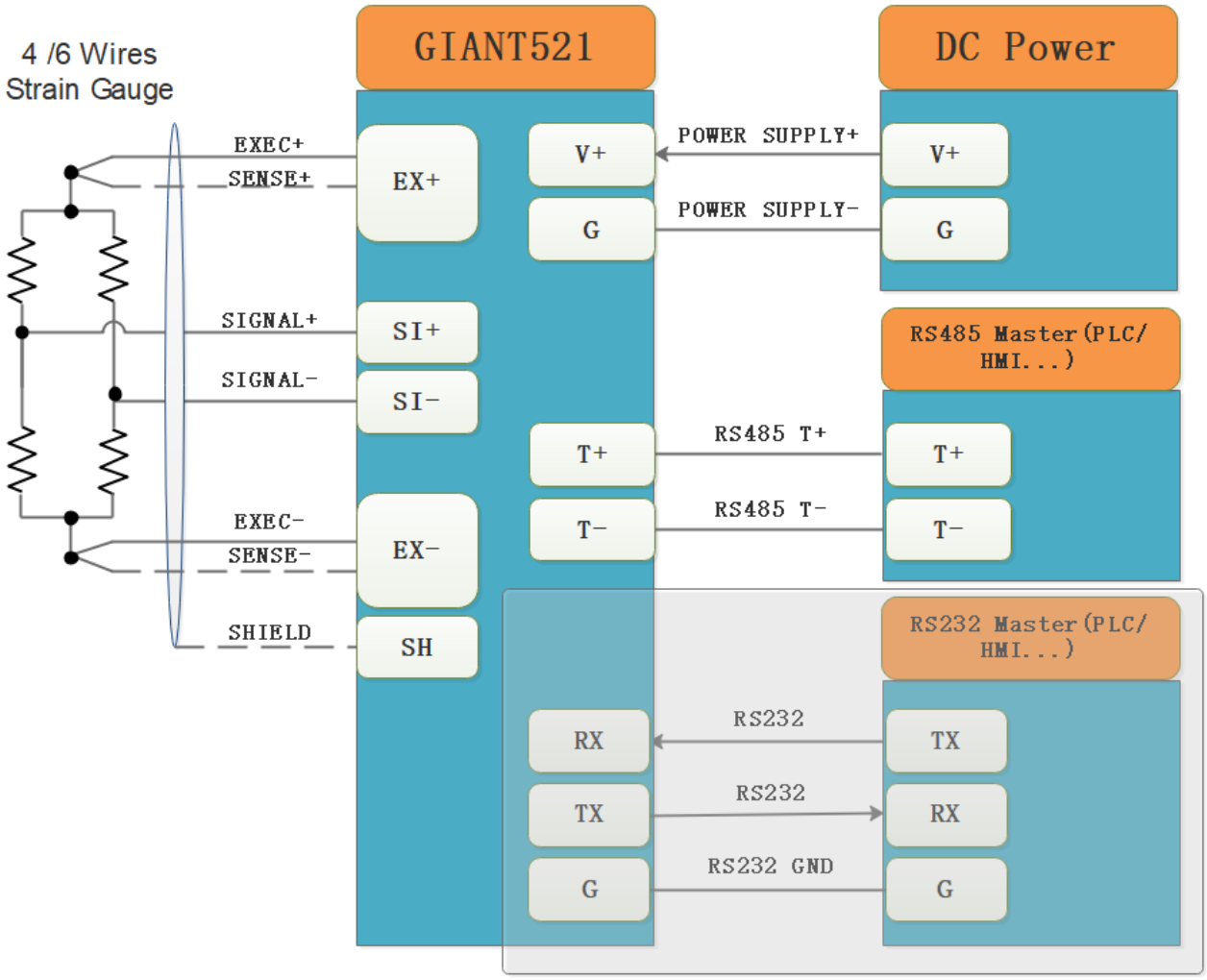
Length*Width*Height: 81*55*25 mm




## 4.2 Wiring

| Connector Wiring | |
|---|---|
| **Connector** | **Comment** |
| J3 – T+ | RS485 T+/A/RS485+<br>RS232 TXD(Connect to Master device's RXD) |
| J3 – T- | RS485 T-/B/RS485-<br>RS232 RXD(Connect to Master device's TXD) |
| J3 – TG | RS232 GND |
| J3 – G | Power supply- |
| J3 – V+ | Power supply+ |
| J2 – EX+ | Weighing channel - Sensor Excitation Output + |
| J2 – SI+ | Weighing channel - Sensor Signal Iutput + |

| | |
|---|---|
| J2 – SI- | Weighing channel - Sensor Signal Iutput - |
| J2 – EX- | Weighing channel - Sensor Excitation Output - |
| J2 – SH | Weighing channel - Shield |




## 4.2.1 Sensor Connection Considerations

The excitation voltage is 5V/60mA for each channel.

（1）The transmitter can accept 4/6 wires strain gauge sensor.

（2）The cable length of sensor should as short as possible and do not align with power cable.

（3）Sensor should be grounded properly to prevent damage to weighing system.

（4）Sensor wiring and connection should be placed well before calibration or there will be weighing error.

（5）Sensor cable should be properly connect with connector to prevent weighing error.

（6）Do not use excitation voltage on transmitter for other usage.

## 4.2.2 Run Indicator

| LED Indicator | Comment |
|---|---|
| On | Running State |
| Flashing | Communicating |
| On/Offcycling when power on | System Error |

## 4.2.3DIP Switch

| DIP Switch | Comment |
|---|---|
| 1-8 | DIP 1~8 are used to set Modbus address, 8 bit binary code from 0 to 255.When it is on, the corresponding bit is set to 1, and when it's off, the bit is set to 0. For example:<br>DIP1~8: Binary 00000001, Modbus address is 1<br>DIP1~8: Binary 00000011, Modbus address is 3<br>DIP1~8: Binary 10000000, Modbus address is 128<br>DIP1~8: Binary 11111111, Modbus address is 255<br>If DIP 1~8 set to all off (00000000), the Modbus address is up tointernal Modbus register(SLAVEADDR).<br>Note: Please power up the transmitter if you change the address to take effective. |
| 9,10 | DIP 9&10 are used to set run mode.<br>CONFIG MODE : DIP 9&10 = OFF ON<br>RUN MODE : DIP 9&10 = Other State<br>ALL RS485 communication parameters (Mosbus Slave Address, baudrate, parity, databits, stopbits) are set in internal register and can be saved when power down, the factory setting is ADDRESS=1, BAUDRATE=9600bps,PARITY=NONE, DATABITS=8bits, STOPBITS=1bit;<br>Sometimes you may FORGET the communication settings and can not communicate with transmitter, In this case, you can set switch to CONFIG mode, then power up the transmitter, and it will start-up with a fixed communication settings(we call it CONFIG mode)<br>ADDRESS=0, BAUDRATE=9600bps,PARITY=NONE, DATABITS=8bits, |

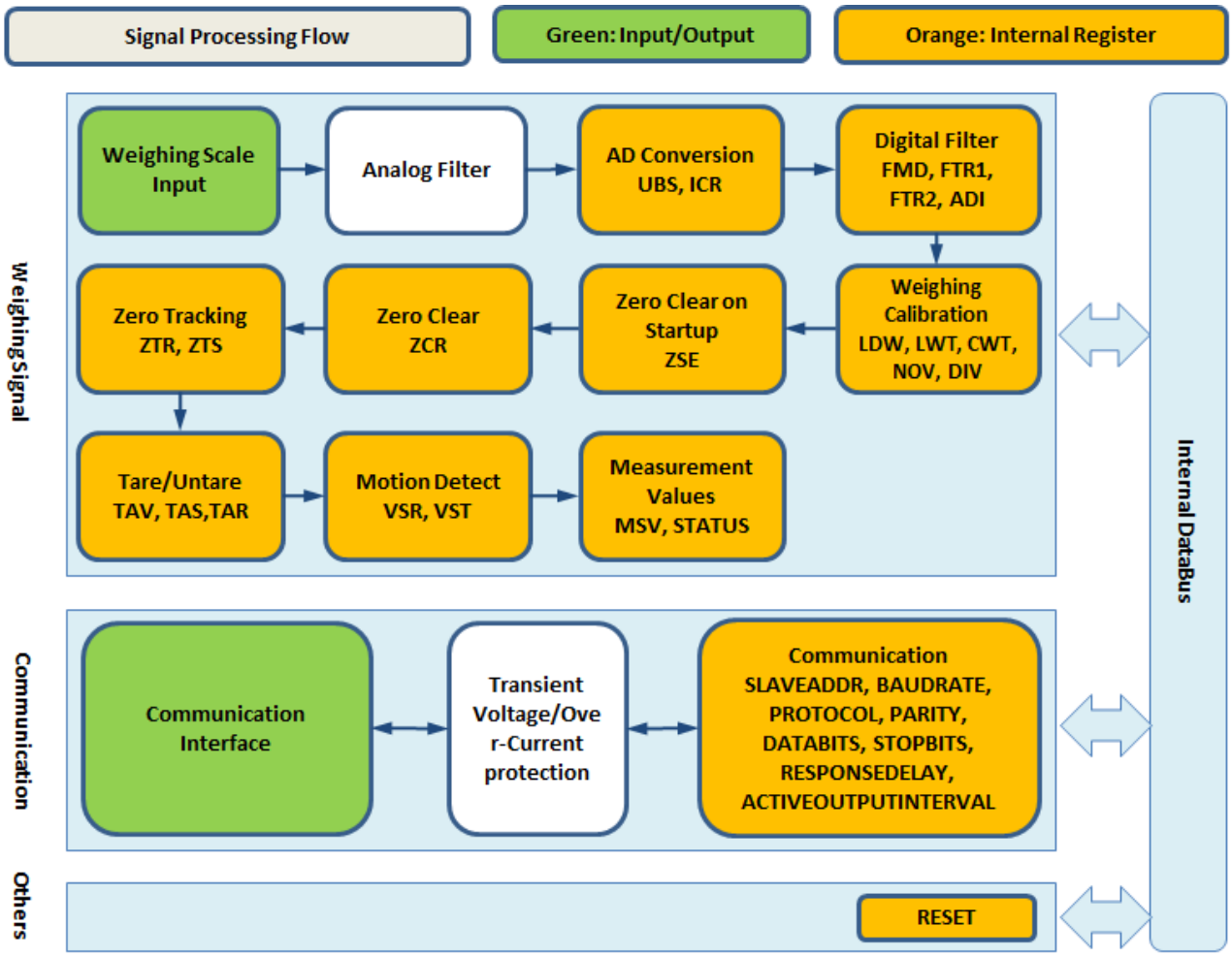
| | |
|---|---|
| | STOPBITS=1bit; Communicate with the transmitterwith those parameters and then set your desired communication settings, then set switch to RUN mode and power up, thenit will communicate with your settings.<br>Note: You can set transmitter parameter in either RUN or CONFIG mode. |

## 4.3 Ordering Information

| **Parameters** | **Code** | **Comment** |
|---|---|---|
| Code 1:Product Series | Giant521 | Dual channel weighing transmitter |
| Code 2:Comm Interface | A<br>B | RS485<br>RS232 |
| Code 3:Protocol | A<br>B | Modbus-RTU<br>Customize |
| Code 4:Shield module | A<br>B | NONE (PCBA)<br>Aluminum Die Casting Enclosure |
| Ordering Code Example:<br>Giant520 Dual channel weighing transmitter,Comm Interface RS485, Protocol Modbus-RTU, Shield module NONE(PCBA),Ordering Code is Giant521 – A AA | | |

# 5 Weighing Parameters

Weighing signal processing chain is as below; all parameters can be read/write through Modbus-RTU protocol.




## 5.1 AD Conversion

| UBS - ADC Signal Unipolar/Bipolar Selection | | |
|---|---|---|
| Data Range | 0: Bipolar | Default:0 |
| Power Down Save | YES | |

| ICR – ADC Internal Conversion Rate | | |
|---|---|---|
| Data Range | 0:100HZ | Default:0 |
| Power Down Save | YES | |

## 5.2 Digital Filter

| FMD – Filter Mode | | |
|---|---|---|
| Data Range | 0:Standard Filter<br>1:FIR Filter | Default:0 |
| Power Down Save | YES | |

| FTR1–Filter 1 | | |
|---|---|---|
| Data Range | 0~9<br>The weighing value will be more stable but speed will be slow when increase this value. | Default:2 |
| Power Down Save | YES | |

| FTR2 – Filter 2 | | |
|---|---|---|
| Data Range | 0~9<br>The weighing value will be more stable but speed will be slow when increase this value. | Default:2 |
| Power Down Save | YES | |

| ADI –Anti Deviation | | |
|---|---|---|
| Data Range | 0~100<br>The weighing value will be more stable but speed will be slow when increase this value. | Default:70 |
| Power Down Save | YES | |

## 5.3 Weighing Calibration

Weight calibration can be done through LOAD CALIBRATION, You need to preapre the weights(counterweight) with known weight.**Note that any write operation of LDW,LWT,CWT, NOV will clear the weight value set by zero on startup, zero tracking, zero clear, or tare value ,and then switch to GROSS mode.**

| LDW - LOAD DEAD WEIGHT | | |
|---|---|---|
| Data Range | -8388608~8388607<br>Internal AD value for load dead weight calibration.<br>Writing 0x7FFFFFFF to this register makes the transmitter | Default:0 |

| | | |
|---|---|---|
| | using current detected AD value as calibration value. | |
| Power Down Save | Immediate | |

● Can write an internal AD valueto LDW register as dead weight AD value（Not recommended）.

● Clear the weighing platform and write 0x7FFFFFFF to LDW register makes the transmitter using current detected AD value as calibration value.

| LWT - LOAD WEIGHT | | |
|---|---|---|
| Data Range | -8388608~8388607<br>Internal AD value for load weight calibration.<br>Writing 0x7FFFFFFF to this register makes the transmitter using current detected AD value as calibration value. | Default:1000000 |
| Power Down Save | Immediate | |

● Can write an internal AD valueto LWT register as dead weight AD value（Not recommended）.

● Clear the weighing platform and write 0x7FFFFFFF to LWT register makes the transmitter using current detected AD value as calibration value.

| CWT - CALIBRATION WEIGHT | | |
|---|---|---|
| Data Range | -8388608~8388607<br>The weight value of weights used for LOAD WEIGHT calibration. | Default:1000000 |
| Power Down Save | Immediate | |

Note:CWT is used for LOAD CALIBRATION.

| NOV- NOMINAL VALUE | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:1000000 |
| Power Down Save | Immediate | |

Note:Weighing Scale Nominal Value

| DIV - DIVISION | | |
|---|---|---|
| Data Range | 0-5<br>0:1<br>1:2<br>2:5<br>3:10<br>4:20 | Default:0 |

| | | |
|---|---|---|
| | 5:50 | |
| Power Down Save | Immediate | |

Note:The measured value resolution.

Example:

Using a strain gauge with nominal 10KG（10000g）,and preapre a weights of 5KG(5000g), The calibration procedure is as following:

(1) DEAD WEIGHT (ZERO) CALIBRATION: clear the weighing platform, and then write 0x7FFFFFF to LDW register to perform calibration.

(2) LOAD WEIGHT CALIBRATION: place the 5KG weights on to the weighing platform, and then write 0x7FFFFFF to LWT register to perform calibration.

(3) SET CALIBRATION WEIGHT: Write 50000 to CWT register for a 5Kg weights, to get 0.1g resolution.Write 5000 to CWT register for a 5Kg weights, to get 1g resolution.

(4)SET NOMINAL VALUE: Write 10000 (1g resolution)to NOVregister for nominal weight 10Kg.

(5) SET DIVISION VALUE: Write 0 to DIV register.

## 5.4 Zero Clear on Startup

| ZSE - Zero on Startup | | |
|---|---|---|
| Data Range | 0:Disabled<br>1: +/-2% * NOV<br>2: +/-5% * NOV<br>3: +/-10% * NOV<br>4: +/-20% * NOV | Default:0 |
| Power Down Save | Immediate | |

Note:

- ZSE=0(Disabled):

When transmitter power on,TAV and TAS in EEPROM(Power Down Save) memory will be recoveried to MSV_TAV and TAS in RAM, and,

If TAS is in **NET** mode, then, MSV_DISP = DETECTED_WEIGHT_ON_POWWERUP - MSV_TAV

If TAS is in **GROSS** mode, then, MSV_DISP = DETECTED_WEIGHT_ON_POWWERUP

- ZSE is not 0(Enabled):

If the DETECTED_WEIGHT_ON_POWWERUP is in the range of ZSE, then set the weight to zero first and then process as mentioned in “ZSE=0(Disabled)”

If theDETECTED_WEIGHT_ON_POWWERUPis out of the range of ZSE, no start up zero clearing action

will be performed.

**Note: DETECTED_WEIGHT_ON_POWWERUP is the weighing value at start up.**

## 5.5 Zero Clear

| ZCR - Zero Clearing | | |
|---|---|---|
| Data Range | 0:Disabled.<br>1: Set Zero Clear Range to +/-4% NOV.<br>2: Set Zero Clear Range to +/-50% NOV.<br>0xFFFF: Perform Zero Clear. | Default:2 |
| Power Down Save | Immediate | |

**Note:** ZCR is used to set the range of zero clear operation, or perform the zero clear operation.

**Note:**When executing this command,if the absolute value(including zero clearing value on start up,zero clearing value and load weigh) to be clear by zero clearing operation is less than the range set by ZCR, display weigh value will be cleared to zero. MSV_TAV will also be cleared and TAS will be changed to GROSS. When zero clear function is disabled(ZCR=0), internal zero clear value(including zero clearing value on start up,zero clearing value and load weigh) will be set to zero.

**Note:**Difference between Zero Clear(ZCL) and Tare(TAR):

- The processing chain process Zero Clear first,then perform zero tracking,and then process the tare.
- The processing chain will not perform zero tracking even the weigh value is zero after tare.

## 5.6 Zero Tracking Range

| ZTR - Zero Tracking Range | | |
|---|---|---|
| Data Range | 0:Disabled<br>1:+/-1 DIV,<br>2:+/-2 DIV,<br>3:+/-5 DIV<br>4:+/-10 DIV<br>5:+/-20 DIV<br>6:+/-50 DIV<br>7:+/-100 DIV | Default:0 |
| Power Down Save | Immediate | |

| ZTS - Zero Tracking Speed | | |
|---|---|---|
| Data Range | 0:1 DIV/0.1s<br>1:2 DIV/0.1s<br>2:5 DIV/0.1s<br>3:10DIV/0.1s<br>4:20 DIV/0.1s<br>5:50 DIV/0.1s<br>6:100 DIV/0.1s<br>7:1 DIV/0.2s<br>8:2 DIV/0.2s<br>9:5 DIV/0.2s<br>10:10DIV/0.2s<br>11:20 DIV/0.2s<br>12:50 DIV/0.2s<br>13:100 DIV/0.2s<br>14:1 DIV/0.5s<br>15:2 DIV/0.5s<br>16:5 DIV/0.5s<br>17:10DIV/0.5s<br>18:20 DIV/0.5s<br>19:50 DIV/0.5s<br>20:100 DIV/0.5s<br>21:1 DIV/1.0s<br>22:2 DIV/1.0s<br>23:5 DIV/1.0s<br>24:10DIV/1.0s<br>25:20 DIV/1.0s<br>26:50 DIV/1.0s<br>27:100 DIV/1.0s | Default:24 |
| Power Down Save | Immediate | |

Note:Zero tracking is used to force the weighing display value to zero when the value around zero.

For example:WhenZTR is 4(10DIV) and ZTS is 24(10DIV/1.0s), The display value will be tracking to zero when it is in range of+/-10DIV, and the value changes less than +/-10DIV per second.

## 5.7 Tare

| TAR - Tare | | |
|---|---|---|
| Data Range | 0:Execute an tare-clear operation, and will automatically switch to GROSS mode(TAS=1)<br>1:Execute a tare operation, and will automatically switch to NET mode(TAS=0) | N/A |
| Power Down Save | NO | |

Note:Tare operation can be executed in both GROSS and NET mode.

When executing tare operation, MSV_DISP will be accumulated to MSV_TAV register, and all following weigh value will subtract MSV_TAV, then saved to MSV_DISP, and will automatically switch to NET mode(TAS=0).

When executing untare operation, MSV_TAV will be set to 0, and will automatically switch to GROSS mode(TAS=1).

| TAV - Tare Value | | |
|---|---|---|
| Data Range | -8388608-8388607 | Default:0 |
| Power Down Save | USING TDD=1 COMMAND TO PRESERVE VALUE | |

| TAS - GROSS/NET MODE SELECTION | | |
|---|---|---|
| Data Range | 0: switch to NET mode(TAS=0)<br>1: switch to GROSS mode(TAS=1) | N/A |
| Power Down Save | USING TDD=1 COMMAND TO PRESERVE VALUE | |

Note:TARE WEIGHT VALUE(MSV_TAV) will be kept when switching between NET and GROSS mode.

● Using TDD=1 to preserve MSV_TAV to TAV(EEPROM),and GROSS/NET selection(TAS) will also be preserved to EEPROM.

● Using TDD=2 to recover MSV_TAV from TAV(EEPROM),and GROSS/NET selection(TAS) will also be recoveried from EEPROM.

● When transmitter power up,automaticlly recover will be performed to recover MSV_TAV from TAV(EEPROM),and GROSS/NET selection(TAS) will also be recovered from EEPROM.

## 5.8 Motion Detect

This is used to set motion detect range and time, If the weighing value changes less than VSR in time period

VST, and the weighing value changes inside the value set by VSR range, the weighing value is regarded as in standstill status(no motion), the MSV_STATUS.BIT0 is reset.

For Example:If VSR=1(1DIV) and VST=3(1.0 Second), when value changes inside 1DIV and speed of changes≤1DIV/1.0 Second, the MSV_STATUS.BIT0 is reset.

| VSR – Motion Detect Range | | |
|---|---|---|
| Data Range | 0：Disabled<br>1:+/-1 DIV,<br>2:+/-2 DIV,<br>3:+/-5 DIV,<br>4:+/-10.0 DIV | Default:2 |
| Power Down Save | Immediate | |

| VST – Motion Detect Time | | |
|---|---|---|
| Data Range | 0:0.1 Second<br>1:0.2 Second<br>2:0.5 Second<br>3:1.0 Second<br>4:2.0 Second<br>5:5.0 Second | Default:3 |
| Power Down Save | Immediate | |

## 5.9 Measurement Value

| MSV_DISP or MSV- DISPLAY WEIGHT VALUE | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:N/A |
| Power Down Save | NO | |

Note:Display Value Register. The data will be gross value (MSV_GROSS) in GROSS display mode and will be net value (MSV_NET) in NET display mode.

| MSV_STATUS - MEASUREMENT STATUS | | |
|---|---|---|
| Data Range | The measurement status of weighting, each bit has corresponding meaning as following note. | Default:N/A |
| Power Down Save | NO | |

NOTE:

BIT0: Indicate weighing in motion state.This bit will be set when weighing is in motion state, If VSR is disabled,then this bit is always 0.

BIT1: Indicate AD hardware error, This bit will be set when there is AD hardware error.

BIT2: Indicate AD overrange, This bit will be set when AD overrange.

BIT3: Indicate positive overrange, This bit will be set when MSV_GROSS is greater than NOV.

BIT4: Indicate negative overrange, This bit will be set when MSV_GROSS is less than -NOV.

BIT5: Indicate the absolute value(including zero clearing value on startup,zero clearing value and load weigh) to be clear by zero clearing operation is greater than the range set by ZCR.

BIT6: Indicate the TARE/Zero Clearing/TAS operation failed.

BIT7: Indicate the NET/GROSS weighing. This bit will be set when in NET mode(MSV_DISP=MSV_NET), and will be reset when in GROSS mode(MSV_DISP= MSV_GROSS).

BIT8: Indicate out of the ZSE range. This bit will be set when the absolute value of accumulated weight(including zero clearing value on startup,zero clearing value and load weigh) is greater than the range set by ZSE.

BIT9: Indicate the data is valid to use. This bit will be set when data is ready and valid to use.

BIT10: Reserved

BIT11: Reserved

BIT12: Reserved

BIT13: Reserved

BIT14: Reserved

BIT15: Reserved

| GROSS WEIGHT VALUE (MSV_GROSS) | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:N/A |
| Power Down Save | NO | |

Note:Gross value register. Gross weight value(MSV_GROSS)= Net weight value(MSV_NET)+ Tare value(MSV_TAV)

| NET WEIGHT VALUE (MSV_NET) | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:N/A |
| Power Down Save | NO | |

Note:Net value register. Gross weight value(MSV_GROSS)= Net weight value(MSV_NET)+ Tare value(MSV_TAV)

| TARE WEIGHT VALUE(MSV_TAV) | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:0 |

| | | |
|---|---|---|
| Power Down Save | USING TDD=1 COMMAND TO PRESERVE VALUE | |

Note:Tare value register. Gross weight value(MSV_GROSS)= Net weight value(MSV_NET)+ Tare value(MSV_TAV)

● Using TDD=1 to preserve MSV_TAV to EEPROM,and GROSS/NET selection(TAS) will also be preserved to EEPROM.

● Using TDD=2 to recover MSV_TAV from EEPROM,and GROSS/NET selection(TAS) will also be recoveried from EEPROM.

● When transmitter power up,automaticlly recover will be performed to recover MSV_TAV from EEPROM,and GROSS/NET selection(TAS) will also be recoveried from EEPROM.

| AD RAW VALUE(MSV_AD) | | |
|---|---|---|
| Data Range | -8388608~8388607 | Default:N/A |
| Power Down Save | NO | |

Note:AD raw value for weighing channel

| MILLI VOLTAGE VALUE(MSV_MV) | | |
|---|---|---|
| Data Range | -300000~300000 for -30.0000mV~30.0000mV | Default:N/A |
| Power Down Save | NO | |

Note:Milli-Voltage value for weighing channel

## 5.10 Parameter Save

| TDD - Transmit Device Data | | |
|---|---|---|
| Data Range | 0:Reset to factory setting<br>1:Save MSV_TAV and TAS in RAM to EEPROM（Power Down Save）<br>2:Recovery MSV_TAV and TAS from EEPROM to RAM | N/A |
| Power Down Save | NO | |

(1) TDD=0

Reset data in EEPROM and RAM to factory setting.

(2) TDD=1

Save MSV_TAV and TAS in RAM to TAV and TAS in EEPROM（Power Down Save）.

(3) TDD=2

Recovery TAV and TAS in EEPROM to MSV_TAV and TAS in RAM, TDD=2 is also executed on power up or reset command.

## 5.11 Serial Communication

| SLAVEADDR -Modbus Slave Address | | |
|---|---|---|
| Data Range | 0-255 | Default:1 |
| Power Down Save | Immediate | |

Modbus Slave Address,can be set to 0-255.Please refer to “DIP Switch” settings for more information about slave address.You need to powerup the transmitter or send “RST” command to take effect.

| BAUDRATE -Baudrate | | |
|---|---|---|
| Data Range | 0:1200bps<br>1:2400bps<br>2:4800bps<br>3:9600bps<br>4:19200bps<br>5:38400bps<br>6:57600bps<br>7:115200bps | Default:3 |
| Power Down Save | Immediate | |

| PROTOCOL -Protocol | | |
|---|---|---|
| Data Range | 0<br>0:Modbus RTU | Default:0 |
| Power Down Save | Immediate | |

| PARITY -Parity | | |
|---|---|---|
| Data Range | 0-2<br>0:NONE<br>1:EVEN<br>2:ODD | Default:0 |
| Power Down Save | Immediate | |

| DATABITS -Databits | | |
|---|---|---|
| Data Range | 1:8 databits | Default:1 |

| | | |
|---|---|---|
| Power Down Save | Immediate | |

| STOPBITS -Stopbits | | |
|---|---|---|
| Data Range | 0:1 stopbits<br>1:2 stopbits | Default:0 |
| Power Down Save | Immediate | |

## 5.12 Reset

| RESET – RESET the device | | |
|---|---|---|
| Data Range | 1 | |
| Power Down Save | NO | |

Note: To perform a system reset, This is the same function as power up the transmitter.

# 6 ModbusProtocol

**Attention!!!: The register marked with "Y"in"Power Down Save"column will be saved in EEPROM, The total write cycle of these register should be less than 100,000 times, or the EEPROM will be failure.**

| Register | Register Address (HEX/DEC) | Data type | Modbus Function Code | Data Range and Comments | Default Value | Power Down Save |
|---|---|---|---|---|---|---|
| LDW | 0x0010/16<br>0x0011/17 | INT32,RW | 3/16 | Load Dead Weight<br>-8388608~8388607 | 0 | Y |
| LWT | 0x0012/18<br>0x0013/19 | INT32,RW | 3/16 | Load Weight<br>-8388608~8388607 | 1000000 | Y |
| CWT | 0x0014/20<br>0x0015/21 | INT32,RW | 3/16 | Calibration Weight<br>-8388608~8388607 | 1000000 | Y |
| NOV | 0x0016/22<br>0x0017/23 | INT32,RW | 3/16 | The nominal value of the strain gauge sensor .<br>-8388608~8388607 | 1000000 | Y |
| | | | | | | |
| TAS | 0x0022/34 | UINT16,RW | 3/6/16 | NET/GROSS mode selection:<br>0:NET mode<br>1:GROSS mode | 1 | Using TDD=1 to save |
| FMD | 0x0023/35 | UINT16,RW | 3/6/16 | Filter Mode<br>0:Standard<br>1:FIR | 0 | Y |
| FTR1 | 0x0024/36 | UINT16,RW | 3/6/16 | Filter Rate 1<br>0-9 | 2 | Y |
| FTR2 | 0x0025/37 | UINT16,RW | 3/6/16 | Filter Rate 2<br>0-9 | 2 | Y |
| ADI | 0x0026/38 | UINT16,RW | 3/6/16 | Anti Deviation<br>0~100 | 70 | Y |
| TAR | 0x0027/39 | UINT16,W | 3/6/16 | 0:Untare<br>1:Tare | | N |
| MSV | 0x0028/40<br>0x0029/41 | INT32,RO | 3 | Display Weight Value<br>-8388608~8388607 | N/A | N |
| STATUS | 0x002A/42 | UINT16,RO | 3 | Measurement Status | N/A | N |
| | | | | | | |
| TDD | 0x0030/48 | UINT16,WO | 3/6/16 | Parameter Save/Recovery | | N |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 0-2 | | |
| | | | | | | |
| UBS | 0x0040/56 | UINT16,RW | 3/6/16 | 1: Bipolar | 1 | Y |
| ICR | 0x0041/57 | UINT16,RW | 3/6/16 | 0:100HZ | 0 | Y |
| | | | | | | |
| TAV | 0x0050/80<br>0x0051/81 | INT32,RW | 3/16 | -8388608~8388607 | 0 | Using TDD=1 to save |
| | | | | | | |
| ZTR | 0x0060/96 | UINT16,RW | 3/6/16 | 0:Disabled<br>1:+/-1 DIV,<br>2:+/-2 DIV,<br>3:+/-5 DIV<br>4:+/-10 DIV<br>5:+/-20 DIV<br>6:+/-50 DIV<br>7:+/-100 DIV | 0 | Y |
| ZTS | 0x0061/97 | UINT16,RW | 3/6/16 | 0:1 DIV/0.1s<br>1:2 DIV/0.1s<br>2:5 DIV/0.1s<br>3:10DIV/0.1s<br>4:20 DIV/0.1s<br>5:50 DIV/0.1s<br>6:100 DIV/0.1s<br>7:1 DIV/0.2s<br>8:2 DIV/0.2s<br>9:5 DIV/0.2s<br>10:10DIV/0.2s<br>11:20 DIV/0.2s<br>12:50 DIV/0.2s<br>13:100 DIV/0.2s<br>14:1 DIV/0.5s<br>15:2 DIV/0.5s<br>16:5 DIV/0.5s<br>17:10DIV/0.5s<br>18:20 DIV/0.5s<br>19:50 DIV/0.5s<br>20:100 DIV/0.5s<br>21:1 DIV/1.0s<br>22:2 DIV/1.0s | 24 | Y |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 23:5 DIV/1.0s<br>24:10DIV/1.0s<br>25:20 DIV/1.0s<br>26:50 DIV/1.0s<br>27:100 DIV/1.0s | | |
| ZCR | 0x0062/98 | UINT16,RW | 3/6/16 | 0:Disabled.<br>1: Set Zero Clear Range to +/-4% NOV.<br>2: Set Zero Clear Range to +/-50% NOV.<br>0xFFFF: Perform Zero Clear. | 0 | Y |
| ZSE | 0x0063/99 | UINT16,RW | 3/6/16 | 0:Disabled<br>1: +/-2% * NOV<br>2: +/-5% * NOV<br>3: +/-10% * NOV<br>4: +/-20% * NOV | 0 | Y |
| VSR | 0x0064/100 | UINT16,RW | 3/6/16 | 0：Disabled<br>1:+/-1 DIV,<br>2:+/-2 DIV,<br>3:+/-5 DIV,<br>4:+/-10.0 DIV | 2 | Y |
| VST | 0x0065/101 | UINT16,RW | 3/6/16 | 0:0.1 Second<br>1:0.2 Second<br>2:0.5 Second<br>3:1.0 Second<br>4:2.0 Second<br>5:5.0 Second | 3 | Y |
| DIV | 0x0066/102 | UINT16,RW | 3/6/16 | 0:1<br>1:2<br>2:5<br>3:10<br>4:20<br>5:50 | 0 | Y |
| | | | | | | |
| MSV_DISP | 0x0070/112<br>0x0071/113 | INT32,RO | 3 | Same with register “MSV” | N/A | N |
| MSV_GROSS | 0x0072/114<br>0x0073/115 | INT32,RO | 3 | Gross Weight Value | N/A | N |
| MSV_NET | 0x0074/116<br>0x0075/117 | INT32,RO | 3 | Net Weight Value | N/A | N |
| MSV_TAV | 0x0076/118<br>0x0077/119 | INT32,RO | 3 | Tare Weight Value | N/A | N |

| | | | | | | |
|---|---|---|---|---|---|---|
| MSV_AD | 0x0078/120<br>0x0079/121 | INT32,RO | 3 | AD Raw Value | N/A | N |
| MSV_MV | 0x007A/122<br>0x007B/123 | INT32,RO | 3 | Milli-Voltage Value | N/A | N |
| MSV_STATUS | 0x007C/124 | UINT16,RO | 3 | Same with register "STATUS" | N/A | N |
| | | | | | | |
| MSV<br>-CHANNEL0 | 0x1000/4096<br>0x1001/4097 | INT32,RO | 3 | Refer to "MSV" register | N/A | N |
| STATUS<br>-CHANNEL0 | 0x1002/4098 | UINT16,RO | 3 | Refer to "STATUS" register | N/A | N |
| | | | | | | |
| RS485-ADDRESS | 0x1200/4608 | UINT16,RW | 3/6/16 | 0-255 | 1 | Y |
| RS485-BAUDRATE | 0x1201/4609 | UINT16,RW | 3/6/16 | 0:1200bps<br>1:2400bps<br>2:4800bps<br>3:9600bps<br>4:19200bps<br>5:38400bps<br>6:57600bps<br>7:115200bps | 3 | Y |
| RS485-PROTOCOL | 0x1202/4610 | UINT16,RW | 3/6/16 | 0:Modbus RTU | 0 | Y |
| RS485-PARITY | 0x1203/4611 | UINT16,RW | 3/6/16 | 0:NONE<br>1:EVEN<br>2:ODD | 0 | Y |
| RS485-DATABITS | 0x1204/4612 | UINT16,RW | 3/6/16 | 1:8 databits | 1 | Y |
| RS485-STOPBITS | 0x1205/4613 | UINT16,RW | 3/6/16 | 0:1 stopbit<br>1:2 stopbits | 0 | Y |
| RS485-RESERVED | 0x1206/4614 | UINT16,RW | 3/6/16 | Reserved | 0 | Y |
| RS485-RESERVED | 0x1207/4615 | UINT16,RW | 3/6/16 | Reserved | 0 | Y |
| | | | | | | |
| RESET | 0x1220/4640 | UINT16,WO | 6/16 | 1 | | N |

UINT16:16 bit unsigned integer data

INT16: 16 bit signed integer data

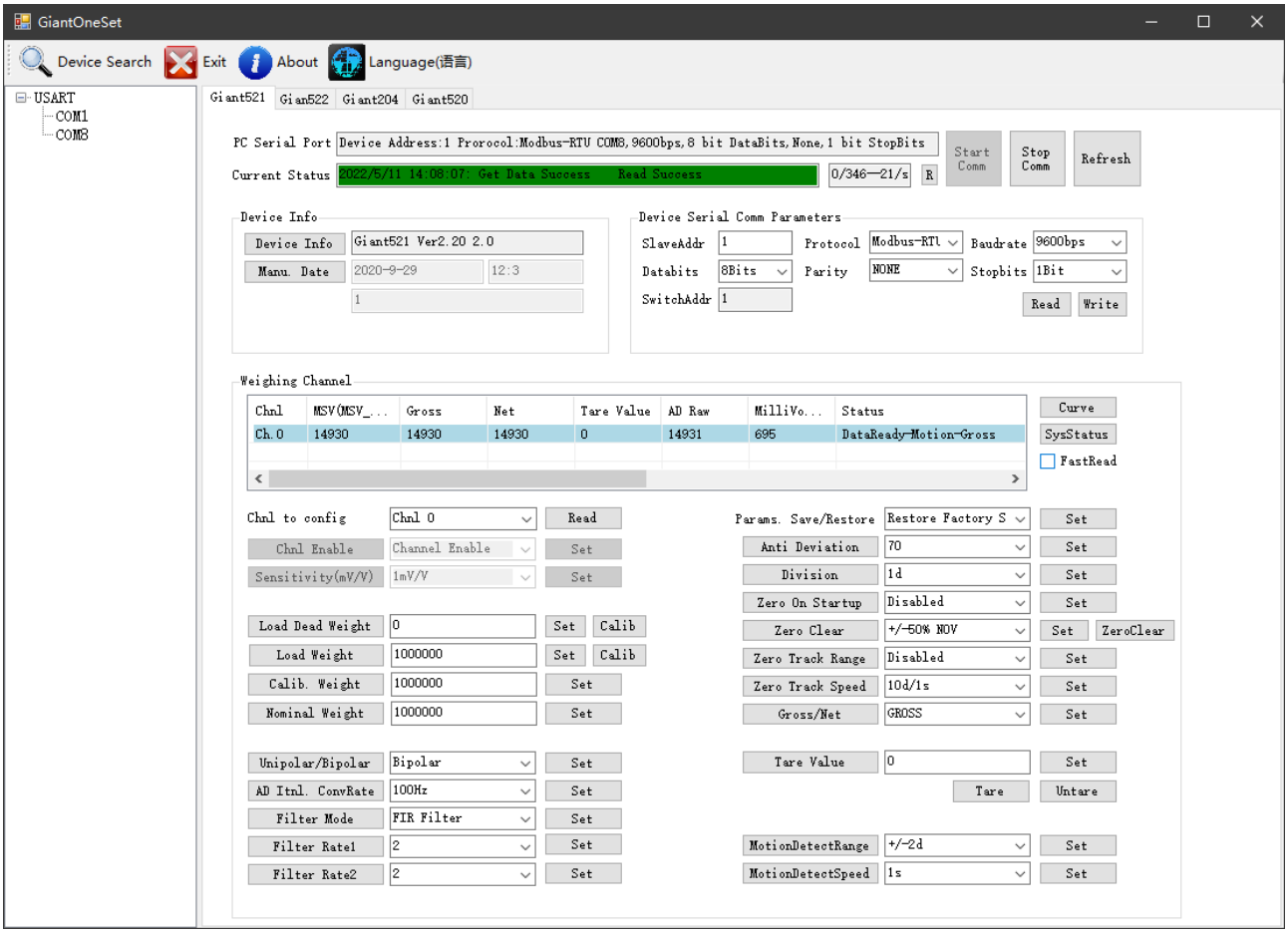
UINT32:32 bit unsigned integer data

INT32:32 bit signed integer data

BIT: bit data

RW: The register can be read and write

RO: The register is read only

WO: The register is write only

# 7 Configuration Utility