Modbus-RTU Protocol
Applicable to AD2015E, TDA-08A

1. Data frame format:

8-bit data,
1 stop bit, No validation (default)
Baud rate: 9600 (default),
Slave address: 1

Read command 03H sending format

byte	XX	function code	XX	XX	XX	XX	CR
definition	slave address	03H	Start address high stage （H）	Start address low stage （L）	Number of registers high stage （H）	Number of registers low stage （L）	che （H

Read command 03H response format

byte	XX	function code	XX	XX	……	XX	CR
definition	Slaves address	03H	byte number	number data 1	number data 2……n-1	number data n	che

Write command 10H sending format

byte	XX	function code	XX	XX	XX	XX	XX	……
definition	slave address	10H	Start addresshigh stage (H)	Start addresslow stage （L）	Number of registers high stage （H）	Number of registers low stage （L）	byte number	number data 1 …… number data n

Write command 10H response format

byte	XX	function code	XX	XX	XX	XX
Definition	Slaves address	10H	Start addresshigh stage (H)	Start addresslow stage (L)	Number of registers high stage (H)	Number of registers low stage (L)

2. Register address table

Category	Name	Address	Type	Description
Communication parameters number	slave address	40001 (000)	16 Bit Unsigned int number	Serial communication address; range 1~247 (need to be unlocked)
	Baud rate setting	40002 (001)	16 Bit Unsigned int number	(Single Bit bps): (need to be unlocked) 0x00:1200 0x01:2400 0x02:4800 0x03:9600 (default) 0x04:19200 0x05:38400 0x06:57600 0x07:115200
	number data frame format	40003 (002)	16 Bit Unsigned int number	**(Modification requires unlocking)** 0x03:8 Bit number data Bit, even check, 1 Bit stop bit 0x04:8 Bit number data Bit, odd check, 1 Bit stop Bit 0x05:8 Bit number data Bit, no check, 1 Bit stop Bit (default) 0x06:8 Bit number data Bit, no check, 2 Bit stop bit
	protocol type	40004 (003)	16 Bit Unsigned int number	0x00: Free protocol 0x01: Modbus RTU (default) 0x02: ASCII protocol (modification requires unlocking
	Command response delay	40005 (004)	16 Bit Unsigned int number	When used for RS485 communication, some hosts swit between sending and receiving slowly, resulting in the l of response instructions. Single Bit ms; range: 0~255; 0 means no delay
	lock/unlock System Configuration	40006 (005)	16 Bit Unsigned int number	Write 0x5AA5 to unlock. After unlocking, can modify it if need to unlock it.
	Firmware version	40007 (006)	16 Bit Unsigned int number	Module internal software version
	Restore factory settings set	40008 (007)	16 Bit Unsigned int number	Restore to factory default parameter number; Write 0x55 to start initialization (recovery requires unlocking)

	module status	40009 (008)	16 Bit Unsigned int number	Bit15--Bit12: all 0 Bit11:0 Peak not detected/1 Detected Bit10:0 Valley value not detected/1 detected Bit9:0 normal/overload Bit8:0 regular/1 smart sensor Bit7:0 non-zero/1 zero point Bit6:0 normal/1 overflow Bit5:0 stable/1 unstable Bit4:0 has not been cleared at power on/1 has been clea at power on. Bit3:0 positive sign/1 negative sign Bit2-0: Small number, click Bit to set
	Register high and low bit order	40010 (009)	16 Bit Unsigned int number	Used to set the order of the high and low bits of the 32-register; 0x00: High Bit first, low Bit last 0x01: Low bit first, high bit last
Measurement stability parameter number	AD conversion speed	40033 (032)	16 Bit Unsigned int number	0x00:10 0x01:40 0x02:640 0x03:1280
	Filtering type	40035 (034)	16 Bit Unsigned int number	Choose the appropriate filtering method based on data i different applications. 0x00: Not used 0x01: Average filtering 0x02: Medium Bit value filtering 0x03: First order filtering 0x04: Moving average filter 0x05: Medium Bit value average filter 0x06: Bit value average filtering in sliding 0x07: Average filter + first-order filter 0x08: Medium Bit value filter + first-order filter 0x09: Moving average filter + first-order filter 0x0A: Medium Bit value average filter + first-order filt

	Filter strength	40036 (035)	16 Bit Unsigned int number	Range: 0~50, the larger the number, the stronger the filtering
Weight Calibration	Zero point calibration	40039 (038)	32 Bit signed integer number	Write 0 to mark the 0 point. After marking the 0 point, you will enter the gain calibration.
	Gain calibration	40043 (042)	32 Bit signed integer number	After calibrating at 0 point, put the weight on and write the actual weight of the we
Code	Real-time AD value	40045 (044)	32 Bit signed integer number	AD converted filtered original code
Calibration without weights	Sensor sensitivity	40047 (046)	32 Bit Unsigned int number	For weight-free calibration, see the sensitivity value on sensor label for details. There is no need to enter a sma number point when setting. For example, if the sensitivity is 1.95582mv/V, Write 19558 (retain 4 Bits after the small number point
	Sensor range	40049 (048)	32 Bit Unsigned int number	The measuring range of the sensor can be calibrated without using weights. If the sensor range is 10kg, to be accurate to 1g, enter
	Real-time weight/actual	40081 (080)	32 Bit signed integer number	Actual weight/force value, negative number uses standa complement method
	Net weight	40083 (082)	32 Bit signed integer number	The value after gross weight minus tare weight; negativ number, sampling standard complement method
	Tare weight	40085 (084)	32 Bit signed integer number	Tare value; range: –8000000 ~ 8000000; write 0x7fffffff to execute
	Full range	40087 (086)	32 Bit signed integer number	Set the maximum range value of the Weighing / Force measuring range

Display Value related parameter number	Gain value	40089 (088)	16 Bit Unsigned int number	0x00: 0.0001 0x01: 0.0002 0x02: 0.0005 0x03: 0.001 0x04: 0.002 0x05: 0.005 0x06: 0.01 0x07: 0.02 0x08: 0.05 0x09: 0.1 0x0A: 0.2 0x0B: 0.5 0x0C: 1 0x0D: 2 0x0E: 5 0x0F: 10 0x10: 20 0x11: 50
	Manual zero range surround	40094 (093)	16 Bit Unsigned int number	Clear range; A single bit is the percentage of full scale; Manually clear after writing 0 Function is invalid
	Clear	40095 (094)	16 Bit Unsigned int number	Write 1 to clear
	Start to zero range "surround"	40096 (095)	16 Bit Unsigned int number	Set the range of power-on clearing; single bit is the percentage of full scale; after writing 0 Not cleared after power on
	Auto zero Bit followed by tracking range	40097 (096)	16 Bit Unsigned int number	Parameter number range: 0~10000; Single Bit: 0.1d; when set to 0, zero Bit is turned off. tracking function
	Auto zero Bit followed by tracking time	40098 (097)	16 Bit Unsigned int number	range： 1~50； single Bit： 0.1s

	Stable range of judgment	40099 (098)	16 Bit Unsigned int number	Parameter number range: 0~10000; single Bit: d; when to 0, the stability judgment function is turned off (Supported by firmware version V1.1 or above)
	Stable time	40100 (099)	16 Bit Unsigned int number	range：1~50; single Bit：0.1s
	Creep Tracking Fan "surround"	40103 (102)	16 Bit Unsigned int number	Parameter number range: 0~1000; single Bit: 0.1d; whe set to 0, creep tracking is turned off Tracking function (supported by firmware version V1.4 above)
	When creep tracking between	40104 (103)	16 Bit Unsigned int number	range: 1~10000; single Bit: 0.1s (supported by firmwar version V1.4 or above)
	Weight single bit	40105 (104)	16 Bit Unsigned int number	0 None 1 g 2 kg 3 t 4 N
Peak and Valley	Clear peaks and valleys	40291 (290)	16 Bit Unsigned int number	Write 1 to clear peak and valley values
	Peak value	40292 (291)	32 Bit signed integer number	Peak value, negative number adopts standard compleme method
	Trough value	40294 (293)	32 Bit signed integer number	Valley value, negative number adopts standard compler method
	Peak detection enable mode	40296 (295)	16 Bit Unsigned int number	0: Turn off peak detection; 1: Peak detection is started after the force value exceed the peak threshold; 2: Peak detection is started after being triggered externa and meeting the peak threshold
	Bottom value detection enable mode	40297 (296)	16 Bit Unsigned int number	0: Turn off valley detection; 1: Start valley detection after the force value exceeds th valley threshold; 2: Start valley detection after being triggered externally and meeting the valley threshold

peak threshold	40298 (297)	32 Bit signed integer number	Peak detection is started only after the force value exce the peak threshold.	
valley threshold	40300 (299)	32 Bit signed integer number	Valley detection is started only after the force value exceeds the valley threshold.	
Peak hysteresis	40302 (301)	32 Bit signed integer number	After the force value falls beyond the peak hysteresis value, the current peak value is latched.	
Trough retracement	40304 (303)	32 Bit signed integer number	After the force value falls beyond the valley return difference value, the current valley value is latched.	
Peak to valley interval time	40306 (305)	16 Bit Unsigned int number	The minimum interval time for peak and valley value measurement. Only when the minimum interval time is exceeded, the peak and valley value measurement will continue to be started (peak value and valley value are the same time); range 0~255	
Simulation parameter number (Only modules with analog functions support)	Simulation type	40131 (130)	16 Bit Unsigned int number	**Set analog signal type** 0x00: 0~20mA current 0x01: 4~20mA current 0x02: -10V~10V voltage 0x03: 0~5V voltage 0x04: 0~10V voltage 0x05: -5V~5V voltage
	output number data type	40132 (131)	16 Bit Unsigned int number	Set output number data type 0x00: measured value; 0x01: Gross weight value; 0x02:Net weight value"
	The first point Analog quantity	40133 (132)	16 Bit signed integer number	Range :-10000~20000, single Bit is millivolt (milliam
	The first point of simulation Quantity correction	40134 (133)	16 Bit signed integer number	Range :-1000~1000,single Bit is millivolts (milliamps)
	The first point Weight value	40135 (134)	32 Bit signed integer number	The first weight; range: negative full scale ~ full scale
	Second point Analog quantity	40137 (136)	16 Bit signed integer number	Range :-10000~20000, single Bit is millivolt (milliam

	Second point simulation Quantity correction	40138 (137)	16 Bit signed integer number	Range :-1000~1000,single Bit is millivolts (milliamps)
	Second point Weight value	40139 (138)	32 Bit signed integer number	Second point weight; range: negative full scale ~ full sc
	The third point Analog quantity	40141 (140)	16 Bit signed integer number	Range : -10000~20000, single Bit is millivolt (millian
	The third point of simulation quantity correction	40142 (141)	16 Bit signed integer number	Range : -1000~1000,single Bit is millivolts (milliamps)
	The third point Weight value	40143 (142)	32 Bit signed integer number	The third point is weight; range: negative full scale ~ fu scale
Switch parameter number	Read input port n(n=0~19)	40201 (200) 40202 (201)	16 Bit Unsigned int number	Read operation: read the status of the corresponding inport; write operation: ignore; up to 20 input ports
	Read and writeoutput port n(n=0~19)	40221 (220) 40222 (221) 40223 (222)	16 Bit Unsigned int number	Read operation: read the status of the corresponding ou port; write operation: write 0 corresponding The output port is closed. Writing 1 corresponds to the output port opening; a switch output is required. This operation is only valid when the function is set to "Communication Control"; up to 20 output ports
	Input port n function setting (n = 0~19)	40241 (240) 40242 (241)	16 Bit Unsigned int number	The function definition is as follows; 0x00: Not used 0x01: Cleared 0x02: Peeling 0x03: Cleaning 0x04: Start peak and valley detection 0x05: Clear peak valley values 0x0A: Start comparator 0 0x0B: Start comparator 1 0x0C: Start comparator 2 0x0D: Start comparator 3 0x0E: Start comparator 4 0x0F: Start comparator 5 (V2 firmware and above)

		40261 (260)	16 Bit Unsigned int number	The function definition is as follows; 0x00: Communication control 0x01: zero point 0x02: stable
	output port n function setting (n=0~19)	40262 (261)		0x03: Overload 0x04; Alarm 0x0A: Comparator 0 comparison result 0x0B: Comparator 1 comparison result 0x0C: Comparator 2 comparison result 0x0D: Comparator 3 comparison result 0x0E: Comparator 4 comparison result 0x0F: Comparator 5 comparison result
		40263 (262)		
	Input port Filter time	40281 (280)	16 Bit Unsigned int number	Input signal filtering time; range: 0~255
Peak and Valley	Clear peaks and valleys	40291 (290)	16 Bit Unsigned int number	Write 1 to clear peak and valley values
	peak	40292 (291)	32 Bit signed integer number	Peak value, negative number adopts standard compleme method
	Trough value	40294 (293)	32 Bit signed integer number	Valley value, negative number adopts standard compler method
	Peak detection enable mode	40296 (295)	16 Bit Unsigned int number	0: Turn off peak detection; 1: Peak detection is started after the force value exceed the peak threshold; 2: Peak detection is started after being triggered extern and meeting the peak threshold
	Bottom value detection enable mode	40297 (296)	16 Bit Unsigned int number	0: Turn off valley detection; 1: Start valley detection after the force value exceeds th valley threshold; 2: Start valley detection after being triggered externally and meeting the valley threshold
	peak threshold	40298 (297)	32 Bit signed integer number	Peak detection is started only after the force value exce the peak threshold.
	valley threshold	40300 (299)	32 Bit signed integer number	Valley detection is started only after the force value exceeds the valley threshold.

	Peak hysteresis	40302 (301)	32 Bit signed integer number	After the force value falls beyond the peak hysteresis value, the current peak value is latched.
	Trough retracement	40304 (303)	32 Bit signed integer number	After the force value falls beyond the valley return difference value, the current valley value is latched.
	Peak to valley interval time	40306 (305)	16 Bit Unsigned int number	The minimum interval time for peak and valley value measurement. Only when the minimum interval time is exceeded, the peak and valley value measurement will continue to be started (peak value and valley value are a the same time); range 0~255
Comparator parameter number (Group)	Comparator 0 Enable mode	40311 (310)	16 Bit Unsigned int number	0: Comparator stops; 1: Start the comparator upon power-on; 2: External signal start and stop comparator
	Comparator 0 judgment method	40312 (311)	16 Bit Unsigned int number	The comparator judgment method is as follows; 0x00: Force value > upper limit 0x01: Middle limit < fc value ≤ upper limit 0x02: Lower limit < force value ≤ middle limit 0x03: Force value ≤ lower limit
	Comparator 0 number data source	40313 (312)	16 Bit Unsigned int number	The source of the comparator number data is as follows 0x00: Measured value 0x01: Gross weight; 0x02: Net weight; 0x03: peak value; 0x04: Valley value; 0x05: Peak-Trough
	Comparator 0 judgment "off delay"	40314 (313)	16 Bit Unsigned int number	Comparator judgment delay time; single Bit 0.1 second
	Upper limit comparison value 0	40315 (314)	32 Bit signed integer number	Set the upper limit value
	mid-range comparison value 0	40317 (316)	32 Bit signed integer number	Set the middle limit value

Lower limit comparison value 0	40319 (318)	32 Bit signed integer number	Set the lower limit value
Comparator 0 Junction fruit	40321 (320)	16 Bit Unsigned int number	The judgment result of the comparator is stored in this register
Comparator 0 stability judgment	40322 (321)	16 Bit Unsigned int number	Whether to wait until the weight is stable before comparing; 0x00: Do not wait 0x01: Wait for stability (Requires firmware version V4.0 or above and supporte by some products)
Comparator 0 threshold	40323 (322)	32 Bit signed integer number	Comparator threshold, when comparing weights other t peak and valley values, the absolute value of the weigh greater than the threshold before starting to compare th output (requires V4.0 firmware version or above and supported by some products)"
Comparator 0 pre Keep	40325 (324)	--	--
Comparator 1 Enable mode	40326 (325)	16 Bit Unsigned int number	0: Comparators stop; 1: Start Comparators upon power-on; 2: External signal starts and stops Comparators
Comparator 1 judgment method	40327 (326)	16 Bit Unsigned int number	Comparators are judged as follows; 0x00: Force value > upper limit 0x01: Middle limit < fo value ≤ upper limit 0x02: Lower limit < force value ≤ middle limit 0x03: F value ≤ lower limit 0x04: Force value > upper limit lower limit < force value≤middle limit 0x05: Force value > upper limit Force value≤lower lim 0x06: Force value ≤ lower limit, middle limit < force v ≤ upper limit

Comparators 1 number data source	40328 (327)	16 Bit Unsigned int number	Comparators number data source is as follows; 0x00: Measured value 0x01: Gross weight; 0x02: Net weight; 0x03: Peak value; 0x04: Valley value; 0x05: Peak -trough value
Comparators 1 "off delay	40329 (328)	16 Bit Unsigned int number	Comparators determine delay time; single Bit 0.1 seconds
Upper limit comparison value 1	40330 (329)	32 Bit signed integer number	Set the upper limit value
mid-range comparison value 1	40331 (330)	32 Bit signed integer number	Set the middle limit value
Lower limit comparison value 1	40332 (331)	32 Bit signed integer number	Set the lower limit value
Comparators 1 knot fruit	40333 (332)	16 Bit Unsigned int number	The judgment results of Comparators are stored in this register
Comparators 1 stable judgment	40334 (333)	16 Bit Unsigned int number	Whether to wait until the weight is stable before comparing; 0x00: Don't wait 0x01: Waiting for stability (Requires firmware version V4.0 or above and supporte by some products)
Comparators 1 threshold	40335 (334)	32 Bit signed integer number	Comparators threshold, when comparing weights other than peak and valley values, the absolute value of the weight is greater than the threshold before starting to compare the output (requires V4.0 firmware version or above and supported by some products)
Comparators 1 pre Keep	40336 (335)	--	--

	Comparators 3 Enable mode	40337 (336)	16 Bit Unsigned int number	0: Comparators stop; 1: Start Comparators upon power-on; 2: External signal starts and stops Comparators
	Comparators 3 Judgment methods	40338 (337)	16 Bit Unsigned int number	Comparators are judged as follows; 0x00: Force value > upper limit 0x01: middle limit < force value ≤ upper limit 0x02: lower limit < force value ≤ middle limit 0x03: Force value ≤ lower limit 0x04: Force value > upper limit lower limit < force value≤middle limit 0x05: Force value > upper limit Force value≤lower lim 0x06: Force value ≤ lower limit, middle limit < force v ≤ upper limit
	Comparators 3 number data source	40339 (338)	16 Bit Unsigned int number	Comparators number data source is as follows; 0x00: Measured value 0x01: Gross weight; 0x02: Net weight; 0x03: peak value; 0x04: Valley value; 0x05: peak-trough value
	Comparators 3 "off delay"	40340 (339)	16 Bit Unsigned int number	Comparators determine delay time; single Bit 0.1 seconds
	Upper limit comparison value 3	40341 (340)	32 Bit signed integer number	Set the upper limit value
	mid-range comparison value 3	40342 (341)	32 Bit signed integer number	Set the middle limit value
	Lower limit comparison value 3	40343 (342)	32 Bit signed integer number	Set the lower limit value
	Comparators 3 knot fruit	40344 (343)	16 Bit Unsigned int number	The judgment results of Comparators are stored in this register

Comparators 3 stable judgment	40345 (344)	16 Bit Unsigned int number	Whether to wait until the weight is stable before comparing; 0x00: Don't wait 0x01: Waiting for stability (Requires firmware version V4.0 or above and supporte by some products)
Comparators 3 threshold	40346 (345)	32 Bit signed integer number	Comparators threshold, When comparing weights other than peak to valley comparisons, The output comparison starts only when the absolute va of the weight is greater than threshold. (Requires firmware version V4.0 or above and supporte by some products)
Comparators 3 pre Keep	40347 (346)	--	--
Lower limit comparison value 3	40348 (347)	32 Bit signed integer number	Set the lower limit value
Comparators 3 knot fruit	40349 (348)	16 Bit Unsigned int number	The judgment results of Comparators are stored in this register
Comparator 3 stability judgment	40397 (396)	16 Bit Unsigned int number	Whether to wait until the weight is stable before comparing; 0x00: Don't wait 0x01: Waiting for stability (Requires firmware version V4.0 or above and supporte by some products)
Comparator 3 Threshold	40398 (397)	32 Bit signed integer number	Comparator threshold, when comparing weights other t peak-to-valley comparison, the absolute value of the weight is greater than the threshold before starting to compare the output (requires V4.0 firmware version or above and supported by some products)
Comparator 3 Pre Keep	40400 (399)	--	--

RC H	CRC L
ck H)	check (L)

CH	CRCL
ck (H)	check (L)

CRCH	CRCL
check (H)	check (L)

CRCH	CRCL
check (H)	check (L)

	Attributes	Defaults
e	Read/Write	0x01
	Read/Write	0x03
	Read/Write	0x05
)	Read/Write	0x01
ch loss	Read/Write	0x00
	just write	--
	read only	--
	just write	--

	read only	--
ured		
bit	Read/Write	0x00
	Read/Write	0x02
for		
	Read/Write	0x09
er		

	Read/Write	0x05
	Read/Write	0x00
ight.	Read/Write	--
	Read-only	--
the ll)	Read/Write	20000
	Read/Write	10000
ard	Read-only	--
ve	Read-only	--
	Read and write	0
	Read/Write	10000

	Read/Write	0x06
	Read/Write	0
	write only	--
	Read/Write	0
	Read/Write	0
	Read/Write	10

set	Read/Write	0
	Read/Write	10
en ... or	Read/Write	0
e	Read/Write	100
	Read/Write	0
	write only	--
ent	Read-only	--
nent	Read-only	--
s ... ally	Read/Write	0x00
ne ... r	Read/Write	0x00

eds	Read/Write	0x00	
	Read/Write	0x00	
	Read/Write	0x00	
	Read/Write	0x00	
at	Read/Write	0x32	
	Read/Write	0x01	
	Read/Write	0x01	
p);	Read/Write	0	
	Read/Write	0	
	Read/Write	0	
p);	Read/Write	10000	

	Read/Write	0
cale	Read/Write	50000
np);	Read/Write	0
)	Read/Write	0
ıll	Read/Write	0
put	Read/Write	--
tput	Read/Write	--
and .0	Read/Write	0x00

	Read/Write	0x00
.		
	Read/Write	0x0A
	write only	--
ent	Read-only	--
nent	Read-only	--
s ally	Read/Write	0x00
ne ,	Read/Write	0x00
eds	Read/Write	0x00
	Read/Write	0x00

	Read/Write	0x00
	Read/Write	0x00
at	Read/Write	0x32
	Read/Write	0x00
orce	Read/Write	0x00
;	Read/Write	0x01
ls	Read/Write	0x00
	Read/Write	0x00
	Read/Write	0x00

	Read/Write	0x00
	Read-only	--
ed	Read/Write	0x00
han t is e	Read/Write	0x00
	--	--
	Read/Write	0x00
orce orce it alue	Read/Write	0x00

	Read/Write	0x01
	Read/Write	0x00
	Read/Write	0x00
	Read/Write	0x00
	Read/Write	0x00
	Read-only	--
ed	Read/Write	0x00
	Read/Write	0x00
	--	--

	Read/Write	0x00
it alue	Read/Write	0x00
	Read/Write	0x01
	Read/Write	0x00
	Read/Write	0x00
	Read/Write	0x00
	Read/Write	0x00
	Read-only	--

	Read/Write	0x00
ed		
alue ed	Read/Write	0x00
	--	--
	Read/Write	0x00
	Read-only	--
ed	Read/Write	0x00
han	Read/Write	0x00
	--	--