IDEC

Think Automation and beyond...

KW2D with Modbus TCP

December 2025

Requirements

Requirements: (Used for this procedure)

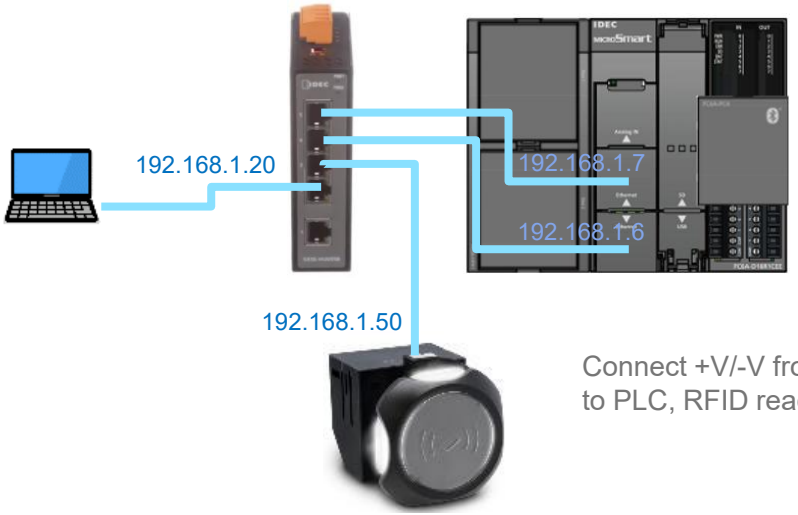
Hardware:

1. FC6A-D16R1CEE (PLC)
2. KW2D-R100Q4E (RFID Reader)
3. PS5R-VC24 (Power supply)
4. SX5E (Ethernet Hub)
5. CAT6 cables (4 nos)
6. RFID tag(Card type or KEYFOB type)

Software:

1. WindLDR (Version 8.18)
2. KW2D Configurator (Version 1.1.1)

Block Diagram(Configuration)



Connect +V/-V from PS5R power supply
to PLC, RFID reader & Ethernet Hub

Memory Assignment

Input relays(100001 to 100032)

KW2D RFID Reader to host device

Input Relay (10****)	Description	Explanation	R/W	Initial Value
0001*1	Verification result OK	When a tag list is registered: Turns on if the verification result is a match.	R	0
0002*1	Verification result failure	Turns on if the RFID tag verification result is failure.	R	0
0003	Host communication status	Indicates the communication status of the Host communication. 0: Communicating, 1: Not communicating	R	0
0004	RFID reader settings status	Indicates whether the KW2D Series Smart RFID Reader has basic settings (project). 0: Has settings, 1: No settings	R	0
0005	Tag list status	Indicates whether the KW2D Series Smart RFID Reader has a tag list. 0: Has a tag list, 1: No tag list	R	0
0006 to 0007	Reserved		R	0
0008	RFID operation status	Indicates the operation status of the KW2D Series Smart RFID Reader. 0: Running, 1: Stopped	R	0
0009*1, *2	Authority D1	Indicates the authority of the detected RFID tag. 1 to 255: Authority	R	0
0010*1, *2	Authority D2			
0011*1, *2	Authority D3			
0012*1, *2	Authority D4			
0013*1, *2	Authority D5			
0014*1, *2	Authority D6			
0015*1, *2	Authority D7			
0016*1, *2	Authority D8			
0017*1	KW2D Series special tag detection	0: KW2D Series special tag not detected, 1: KW2D Series special tag detected	R	0
0018 to 0032	Reserved		R	0

Memory Assignment

Coil relays(000001 to 000016)

Host device to KW2D RFID Reader

Coil Relay (00****)	Description	Explanation	R/W	Initial Value
0001	Stop RFID command	Stops KW2D Series Smart RFID Reader detection processing of RFID tags. Restores original operation when canceled. 0: Cancel stop command, 1: Stop command	R/W	0
0002	Forcibly cancel lock command	Cancels the lock operation. 0: No cancel lock operation command, 1: Turn on cancel lock operation command	R/W	0
0003	Forcibly stop timer for lock time command	Stops the timer for the lock time. 0: No command, 1: Turn on stop timer for lock time command	R/W	0
0004 to 0006	Reserved		R/W	0
0007	OK command	ON: Turn on OK command, OFF: No command	R/W	0
0008	Failure command	ON: Turn on failure command, OFF: No command	R/W	0
0009	Enable manual control of buzzer	Controls the buzzer. 0: Disable manual control of buzzer, 1: Enable manual control of buzzer	R/W	0
0010	Control buzzer	Turns the buzzer on/off. 0: Turn off buzzer, 1: Turn on buzzer	R/W	0
0011	Enable manual control of LEDs (red)	Controls the LEDs (red). 0: Disable manual control of LEDs (red), 1: Enable manual control of LEDs (red)	R/W	0
0012	Control LEDs (red)	Turns the LEDs (red) on/off. 0: Turn off LEDs (red), 1: Turn on LEDs (red)	R/W	0
0013	Enable manual control of LEDs (white)	Controls the LEDs (white). 0: Disable manual control of LEDs (white), 1: Enable manual control of LEDs (white)	R/W	0
0014	Control LEDs (white)	Turns the LEDs (white) on/off. 0: Turn off LEDs (white), 1: Turn on LEDs (white)	R/W	0
0015	Enable manual control of LEDs (green)	Controls the LEDs (green). 0: Disable manual control of LEDs (green), 1: Enable manual control of LEDs (green)	R/W	0
0016	Control LEDs (green)	Turns the LEDs (green) on/off. 0: Turn off LEDs (green), 1: Turn on LEDs (green)	R/W	0

Memory Assignment

Input Registers (300001 to 300032)

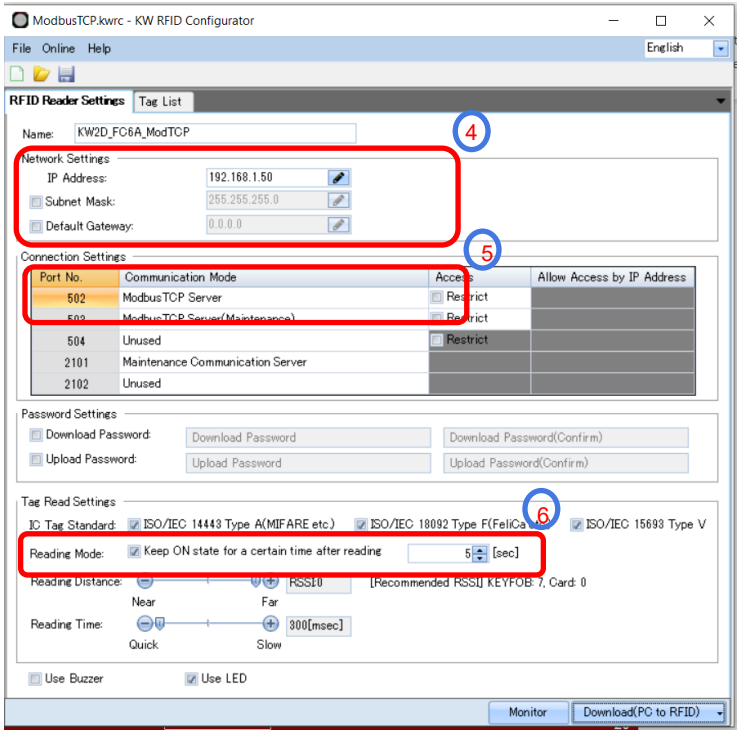
KW2D RFID Reader to host device

Input Register (30****)	Description	Explanation	R/W	Initial Value
0001	Reserved		R	0
0002*1, *2	Authority (verification result)	0: Not match, 1 to 255: Authority, 65535: Reading	R	65535
0003*1	Data length of UID	Number of bytes (1 to 10, 0 indicates that no UID is stored)	R	0
0004*1	UID	Stored in order of upper byte (1st byte) and lower byte (2nd byte)	R	0
0005*1	UID	Stored in order of upper byte (3rd byte) and lower byte (4th byte)	R	0
0006*1	UID	Stored in order of upper byte (5th byte) and lower byte (6th byte)	R	0
0007*1	UID	Stored in order of upper byte (7th byte) and lower byte (8th byte)	R	0
0008*1	UID	Stored in order of upper byte (9th byte) and lower byte (10th byte)	R	0
0009 to 0011*1	Reserved		R	0
0012*1	Name1	Stored in order of upper byte (1st character) and lower byte (2nd character)	R	0
0013*1	Name1	Stored in order of upper byte (3rd character) and lower byte (4th character)	R	0
0014*1	Name1	Stored in order of upper byte (5th character) and lower byte (6th character)	R	0
0015*1	Name1	Stored in order of upper byte (7th character) and lower byte (8th character)	R	0
0016*1	Name1	Stored in order of upper byte (9th character) and lower byte (10th character)	R	0
0017*1	Name1	Stored in order of upper byte (11th character) and lower byte (12th character)	R	0
0018*1	Name1	Stored in order of upper byte (13th character) and lower byte (14th character)	R	0
0019*1	Name1	Stored in order of upper byte (15th character) and lower byte (16th character)	R	0
0020*1	Name1	Stored in order of upper byte (17th character) and lower byte (18th character)	R	0
0021*1	Reserved		R	0
0022*1	Name2	Stored in order of upper byte (1st character) and lower byte (2nd character)	R	0
0023*1	Name2	Stored in order of upper byte (3rd character) and lower byte (4th character)	R	0
0024*1	Name2	Stored in order of upper byte (5th character) and lower byte (6th character)	R	0
0025*1	Name2	Stored in order of upper byte (7th character) and lower byte (8th character)	R	0
0026*1	Name2	Stored in order of upper byte (9th character) and lower byte (10th character)	R	0
0027*1	Name2	Stored in order of upper byte (11th character) and lower byte (12th character)	R	0
0028*1	Name2	Stored in order of upper byte (13th character) and lower byte (14th character)	R	0
0029*1	Name2	Stored in order of upper byte (15th character) and lower byte (16th character)	R	0
0030*1	Name2	Stored in order of upper byte (17th character) and lower byte (18th character)	R	0
0031	Number of detections	Stores the number of detected RFID tags.	R	0
0032	Lock time	Lock time (counts down)	R	0

Procedure

Configuration of KW2D:

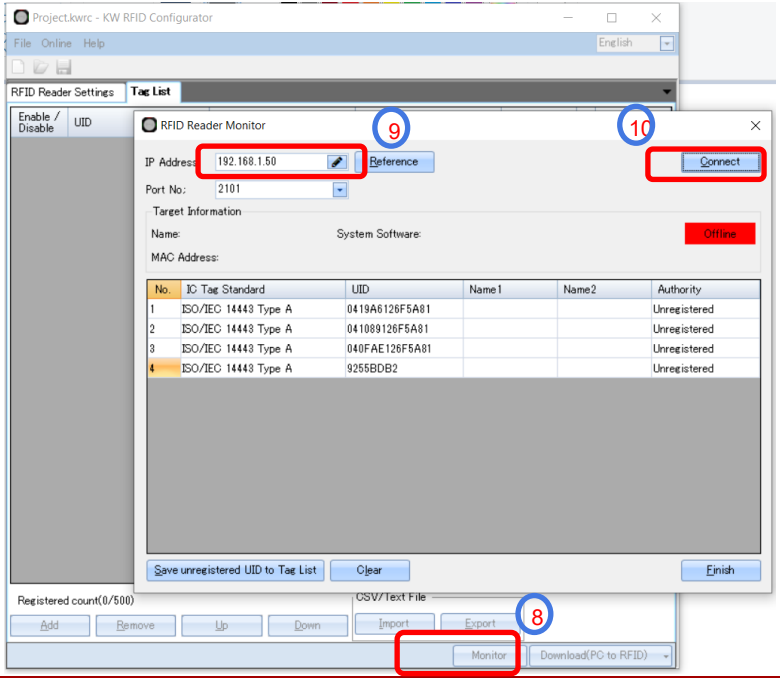
1. Open KW2D Configurator software
2. Click on “File” -> Click on “New Project”
3. Enter Name: KW2D_FC6A_ModTCP (Not Mandatory option, can skip if not necessary)
4. Follow the steps ---------->



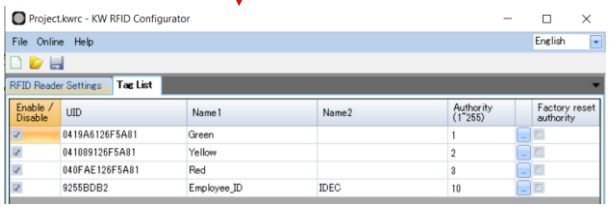
Procedure

Configuration of KW2D:

6. Click on " Tag List" tab. (For registering tags/UIDs)
7. There are two procedures to register tags
   - Manually by clicking on "Add" button (or)
   - Scanning each RFID tag to the reader (Follow procedure given below)



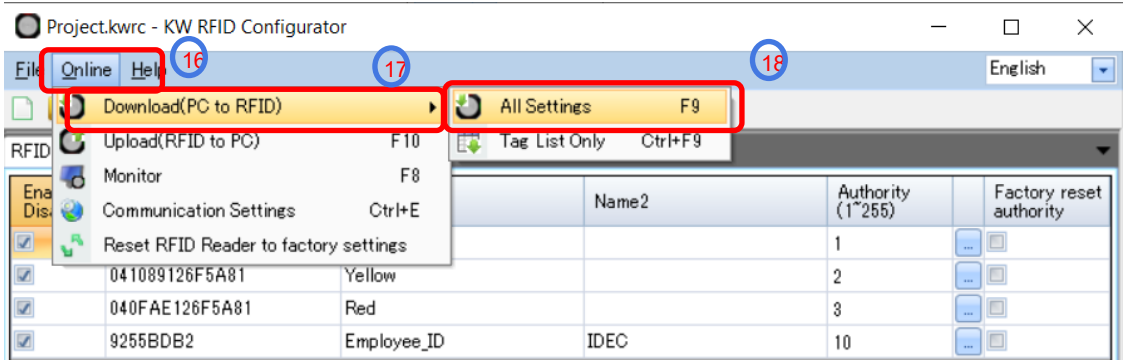
11. Once PC-KW2D are connected
12. Scan the tags on to the reader
13. Click on " Save unregistered UID to Tag List" to get them registered.
14. We can give "Authority" and names to each UIDs.



Procedure

Configuration of KW2D:

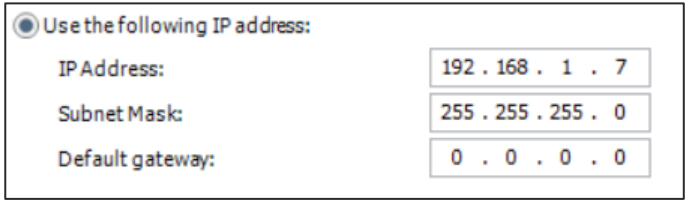
15. After doing all settings, we have to write parameters to the RFID reader(KW2D)



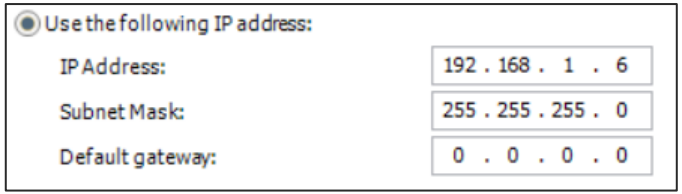
Procedure

Configuration of WindLDR:

1. Open WindLDR software.
2. If Project Recovery window opens up, click on “Close”.
3. Select the PLC model as “ FC6A-D16XXCEE” (or select the model as per your usage)
4. Open Configuration-> Click on Ethernet Port 1 and sent IP address as shown below:



5. Click on Ethernet Port 2 on the left of selections to open it’s settings, set the IP address as shown below:

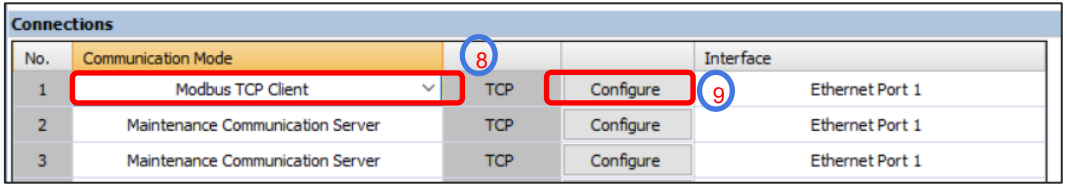


6. Click on Connection Settings on the left of selections to open it’s settings

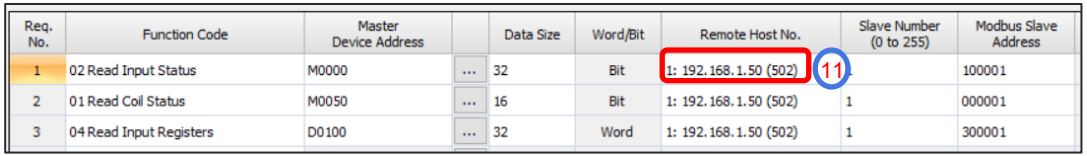
Procedure

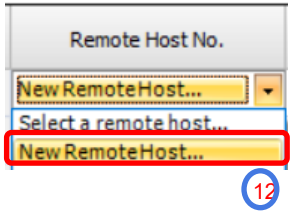
Configuration of WindLDR:

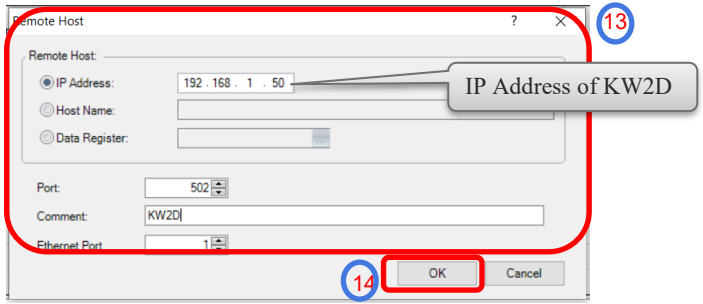
7. Select Modbus TCP Client and click on Configure, as shown in the image below:



10. Do the settings as shown below and click on Remote Host No. (Step no. 11):







Procedure

Configuration of WindLDR:

15. Click “OK” for Modbus TCP Client window.
16. Click “OK” for Function Area Settings window.
17. Go to Online -> Click on Download (to download the PLC settings)

To Monitor the result, we can go to monitor to check the result in Data registers

1. M0 ~ M15 (Commands(bits) to KW2D)
2. M50~D585 (Feedback(bits) From KW2D)
3. D100~D131 (Values(registers) from KW2D)

Testing

1. Open “Batch Monitor” to check the results in WindLDR.
2. Scan an ID to check the results.

For Example, We have scanned Tag:

Enable / Disable	UID	Name1	Name2	Authority (1~255)	Factory reset authority
☑	9255BDB2	Employee_ID	IDEC	10	☐

1. You can observe the results for UID in registers D103 & D104, since it is 4 Byte length (result provided in D102). Also authority can be viewed in D101.
2. To Write commands take the help of Custom window.(as shown in next slide)

Batch Monitor

Device: D (Data Register (D0000 to D7999)) 100 Monitor Type: HEX (W)

Comment

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
D0100	0057	000A	0004	9255	BDB2	0000	0000	0000	0000	0004
D0110	0000	456D	706C	6F79	6565	5F49	4400	0000	0000	0000
D0120	0000	4944	4543	0000	0000	0000	0000	0000	0000	0000
D0130	0003	0005	0000	0000	0000	0000	0000	0000	0000	0000

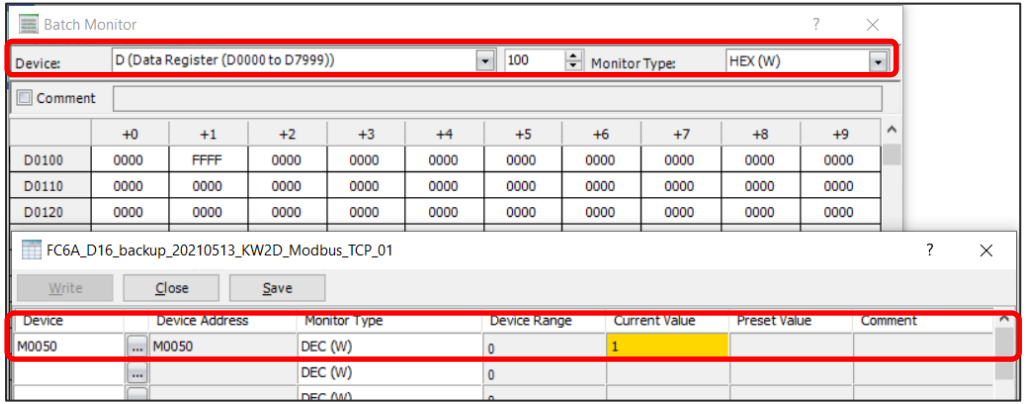
Batch Monitor

Device: M (Internal Relay (M0000 to M7997)) 0 Monitor Type: BIN (B)

Comment

	+17	+16	+15	+14	+13	+12	+11	+10	+7	+6	+5	+4	+3	+2	+1	+0	DEC (W)
M0000	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	2625
M0020	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	3840
M0040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Testing



Forcing ON M50 is Stopping RFID reader from detection

Thank you