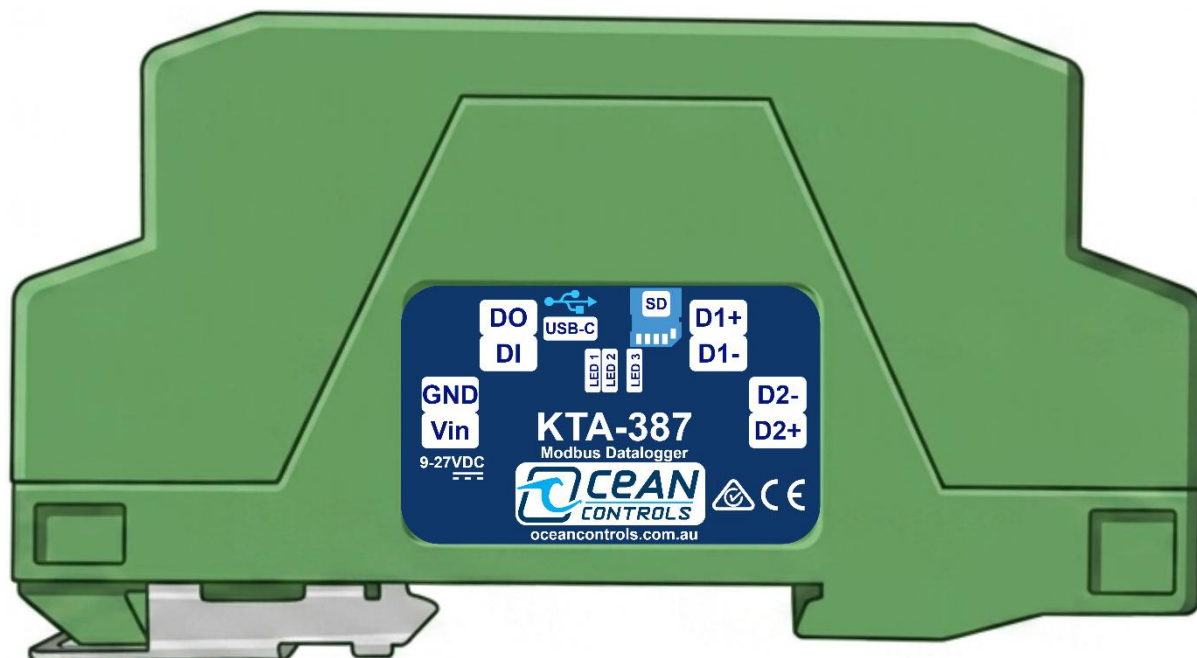




USER MANUAL

KTA-387 Modbus Datalogger

Manual version 1.0
2026 Ocean Controls

Record of revisions

Revision 1.0	KTA-387 Release
--------------	-----------------

Table 1

Contents

Record of revisions	1
Contents	2
1 System Overview.....	3
1.1 Key Features	3
2 Specifications	4
2.1 Electrical.....	4
2.2 Logging	4
2.3 LEDs	4
2.4 Mechanical	5
3 Connections/Peripherals	6
4 Quick Start Guide	7
5 Configuration Webpage	10
6 Logging Characteristics	13
6.1 Logging Files.....	13
6.2 Logging Parameters	14
6.3 Notes on Log Rate and New File Rate.....	16
7 RTC Battery.....	17
8 Troubleshooting.....	18
8.1 Error Codes.....	18
8.2 Factory reset	18

1 System Overview

The KTA-387 is a robust, standalone Modbus data logger designed for seamless integration into industrial environments. It offers 2 independent, user-configurable serial ports. Whether configured to actively poll external devices as a network Master, or to receive incoming data as a network Slave, it provides a reliable solution for acquiring, monitoring, and securely storing critical Modbus data.

Designed with user accessibility in mind, the unit features a built-in Wi-Fi Access Point (AP) that hosts an embedded web server. This allows technicians to configure, manage, and monitor the device directly from a smartphone, tablet, or PC without requiring specialized proprietary software.

1.1 Key Features

- **Wireless Configuration Interface:** Connect directly to the unit's hosted webpage via its built-in Access Point for intuitive, browser-based setup.
- **Extensive Data Mapping:** Configure up to 100 user-defined logging channels, providing the flexibility to monitor a wide array of data points across your network.
- **Advanced Logging & File Management:** Gain precise control over your data capture. Users can independently adjust both polling and logging intervals and configure the logger to automatically generate new log files based on convenient time thresholds (hourly, daily, monthly, or yearly).
- **Live Diagnostic Dashboard:** Monitor live data at a glance. The web interface includes a real-time dashboard displaying active diagnostics and live channel data—whether the values are being retrieved from external slaves or written to the KTA-387's own registers by an external Master.

2 Specifications

2.1 Electrical

Parameter	Min	Typical	Max	Unit
Power supply	7	12/24	27	VDC
Power usage		0.36	1	W (@24VDC)
Digital Input	1x Non-isolated digital input			
Digital Output	1x Non-isolated open-collector output			
Serial Interface	2x RS-485 (Modbus RTU)			
Backup Battery (RTC)	CR1225			
Backup Time (RTC)	3-4 Years			

Table 2

2.2 Logging

Parameter	Min	Typical	Max	Unit
Logging Channels	1		100	Channels
Data size/channel	1	16	32	Bits
Logging Interval	1	60	100000	Seconds
Sample Time	500	1000	60000	Milliseconds
SD Card Type	Micro SD FAT32 ≤32GB NOT hot-swappable			
File Type	*.CSV			

Table 3

2.3 LEDs

LED	Indication	Description
Port 1 (LED 1)	Flash GREEN	Port 1 Modbus transaction success
	Flash RED	Port 2 Modbus transaction fail
Port 2 (LED 2)	Flash GREEN	Modbus transaction success
	Flash RED	Modbus transaction fail
Status (LED 3)	Solid ORANGE	Device powered and running. Access point disabled
	Flashing ORANGE	Device powered and running. Access point enabled
	Flash GREEN	Log write success
	Flash RED	Log write failed

Table 4

2.4 Mechanical

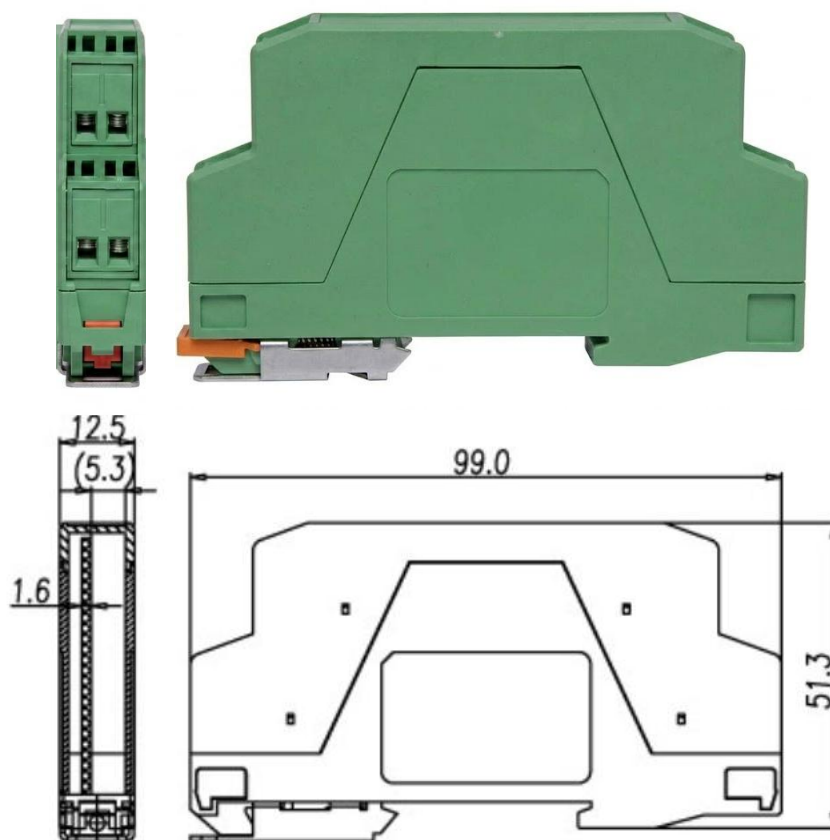


Figure 1: Mechanical Dimensions

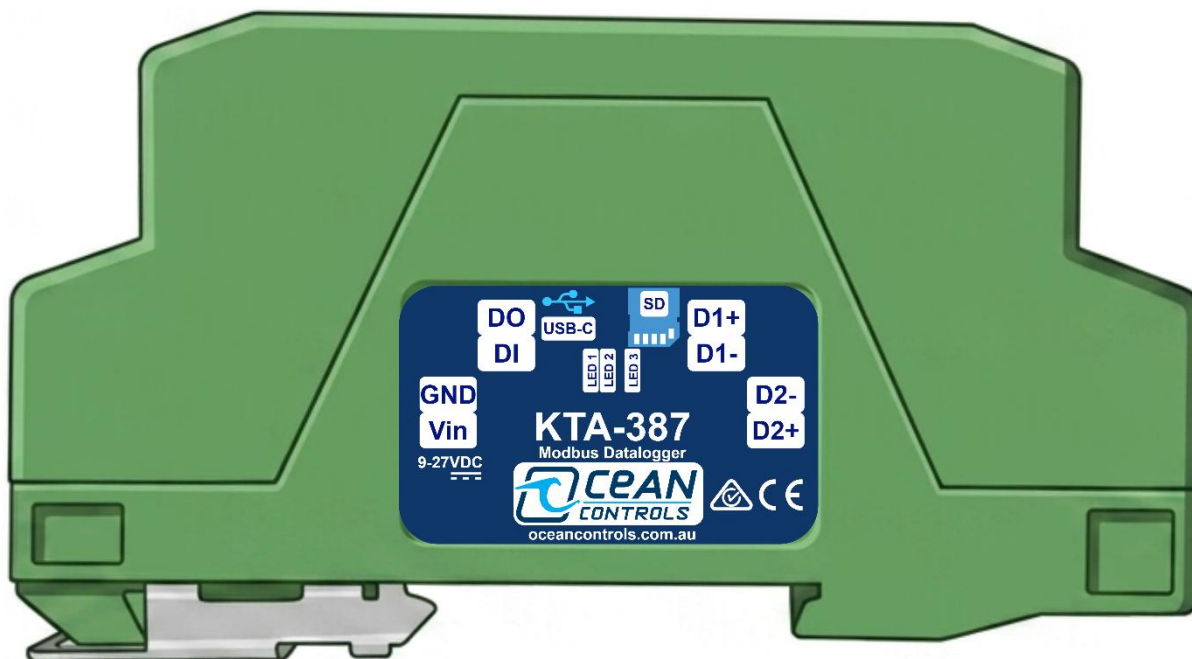


Figure 2: Side View

3 Connections/Peripherals

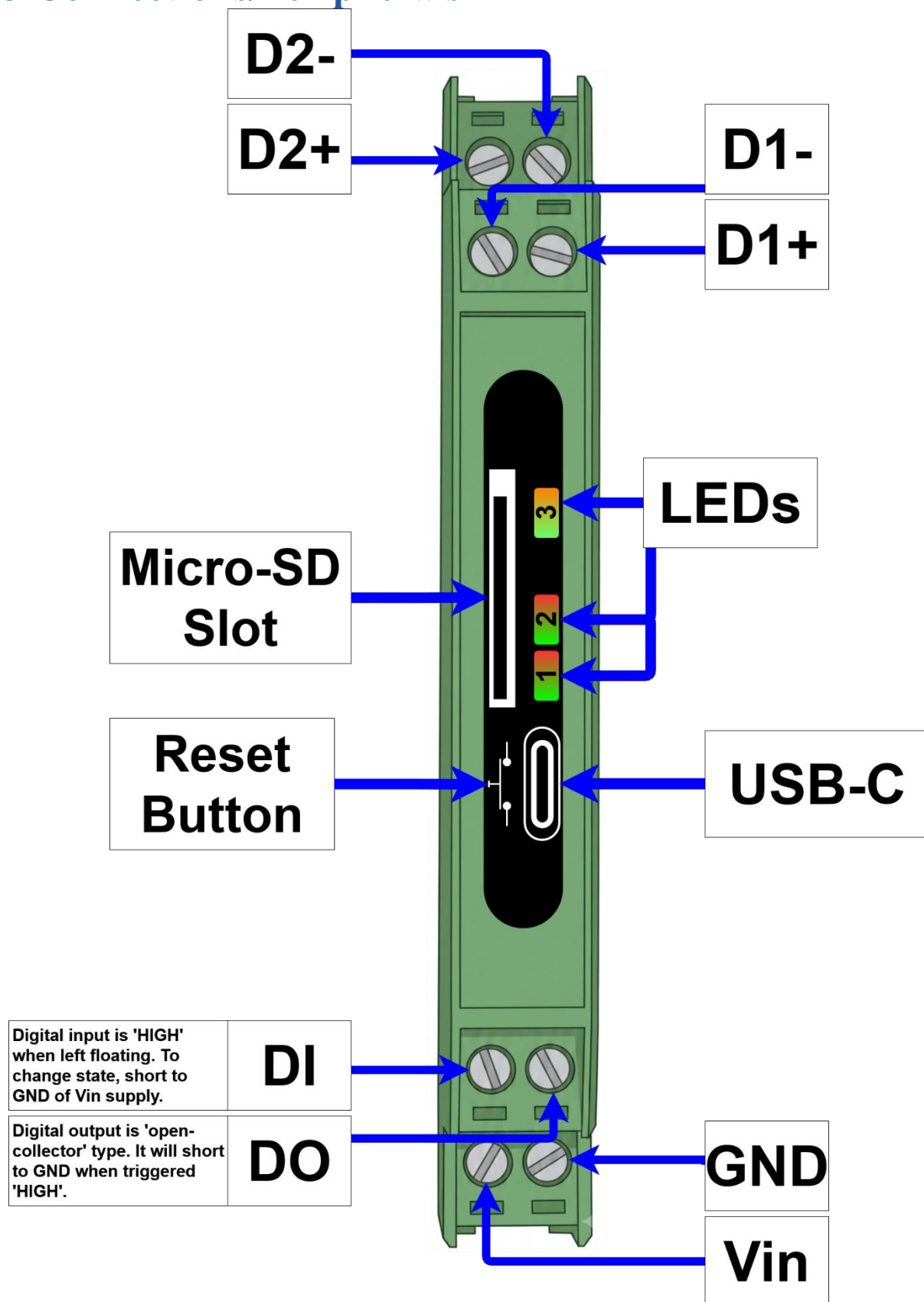
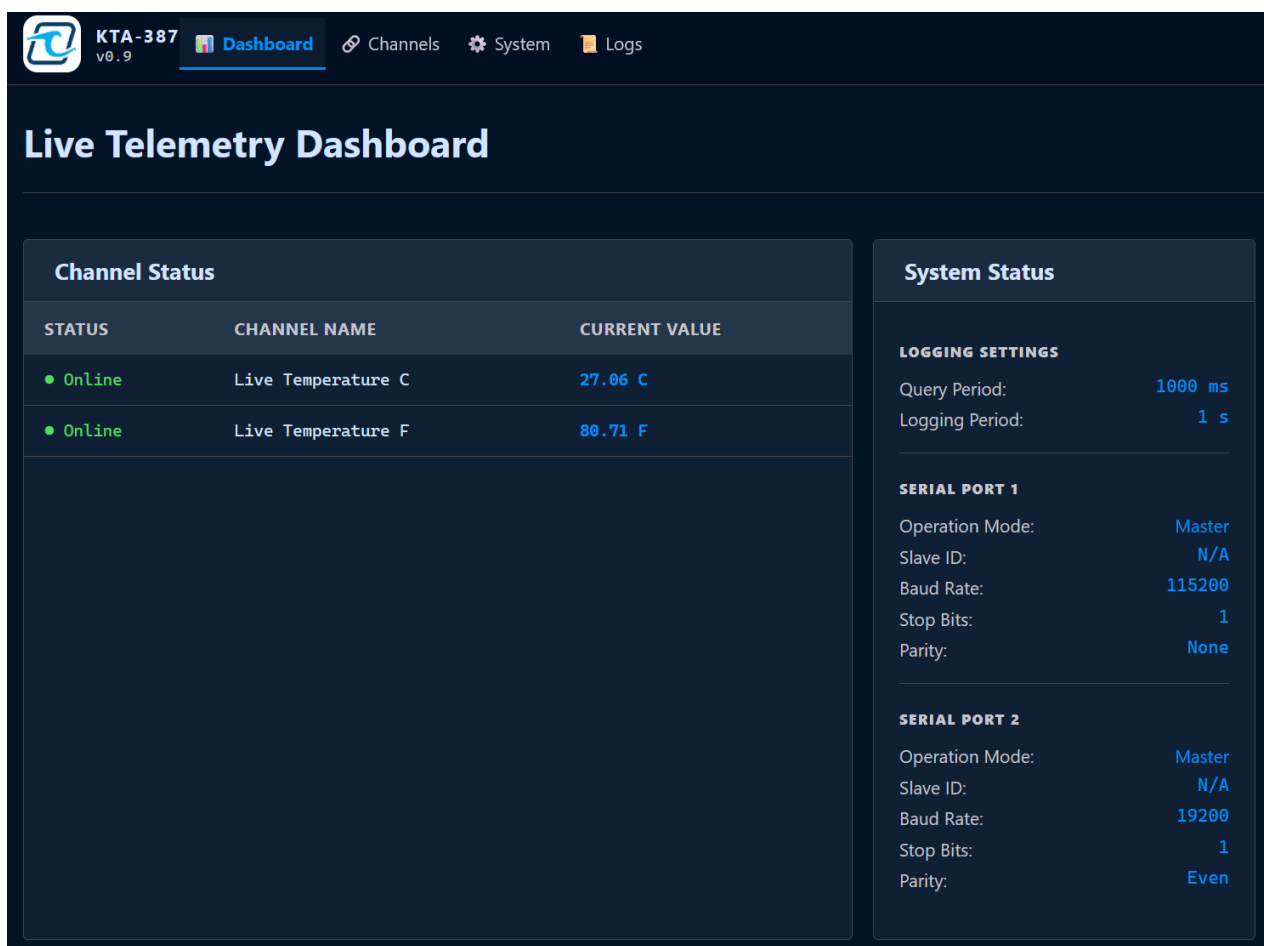


Figure 3: Connection/Peripherals Diagram

4 Quick Start Guide

1. Power the unit via X-XVDC or USB-C
2. Connect to the Wi-Fi access point (SSID: KTA387_XXXX) where XXXX are the last 4 MAC address bytes. The AP password is '**password**'.
3. Navigate to '192.168.4.1' in your preferred web browser.
4. Initially, you will be presented with the 'Dashboard' page. You can circle back here to check your configuration once completed.



Channel Status

STATUS	CHANNEL NAME	CURRENT VALUE
● Online	Live Temperature C	27.06 C
● Online	Live Temperature F	80.71 F

System Status

LOGGING SETTINGS

Query Period: 1000 ms
Logging Period: 1 s

SERIAL PORT 1

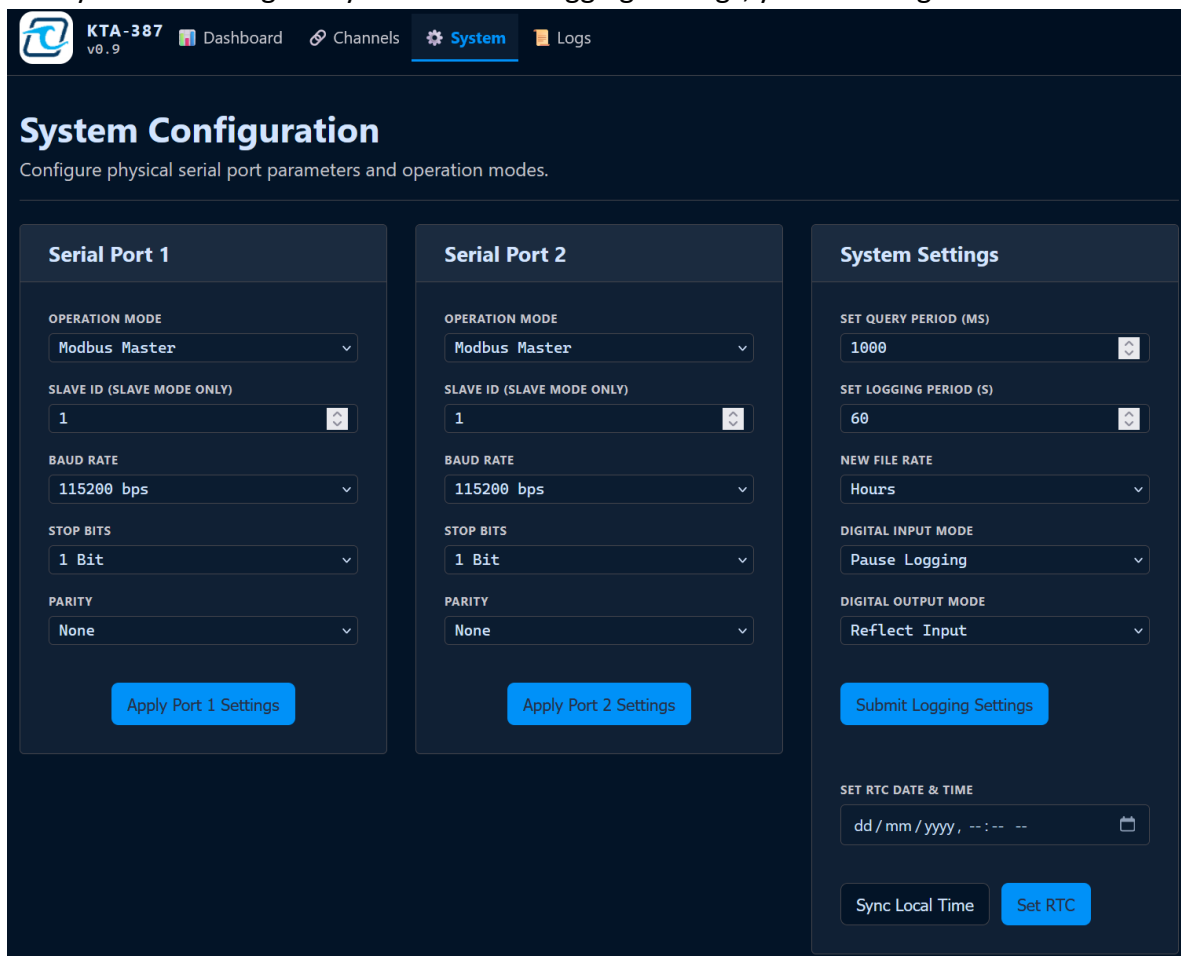
Operation Mode: Master
Slave ID: N/A
Baud Rate: 115200
Stop Bits: 1
Parity: None

SERIAL PORT 2

Operation Mode: Master
Slave ID: N/A
Baud Rate: 19200
Stop Bits: 1
Parity: Even

5. Navigate to the 'System' page to configure your serial port(s) and logging settings. For a more detailed description of the available configuration, refer to [section 5](#) in this manual.

6. Once you have configured your serial and logging settings, you can navigate to the 'Channels' page.



Serial Port 1

OPERATION MODE: Modbus Master

SLAVE ID (SLAVE MODE ONLY): 1

BAUD RATE: 115200 bps

STOP BITS: 1 Bit

PARITY: None

Apply Port 1 Settings

Serial Port 2

OPERATION MODE: Modbus Master

SLAVE ID (SLAVE MODE ONLY): 1

BAUD RATE: 115200 bps

STOP BITS: 1 Bit

PARITY: None

Apply Port 2 Settings

System Settings

SET QUERY PERIOD (MS): 1000

SET LOGGING PERIOD (S): 60

NEW FILE RATE: Hours

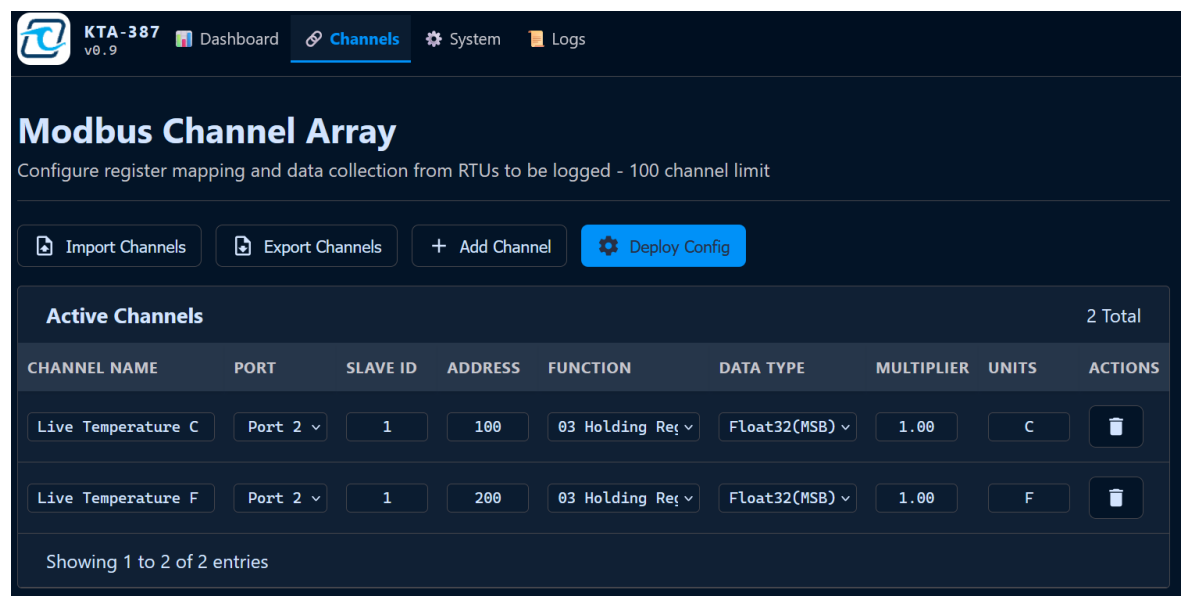
DIGITAL INPUT MODE: Pause Logging

DIGITAL OUTPUT MODE: Reflect Input

Submit Logging Settings

SET RTC DATE & TIME: dd / mm / yyyy, -- : -- --

Sync Local Time Set RTC



Modbus Channel Array

Configure register mapping and data collection from RTUs to be logged - 100 channel limit

Import Channels Export Channels + Add Channel Deploy Config

Active Channels 2 Total

CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS
Live Temperature C	Port 2	1	100	03 Holding Reg	Float32(MSB)	1.00	C	
Live Temperature F	Port 2	1	200	03 Holding Reg	Float32(MSB)	1.00	F	

Showing 1 to 2 of 2 entries

7. Here you can configure which modbus addresses to be read (in master mode), or which modbus addresses to be created (in slave mode). You can set the Channel Name, Port, Slave ID (Master mode only), Address, Function Code, Datatype (32-bit will read 2 registers), Multiplier (this is applied after datatype conversion), and units.

8. Press the 'Add Channel' button to add extra channels, and the 'Deploy Config' button to send the configuration to the KTA-387.
 - a. You can also export/import channels via a JSON file to copy the configuration to another unit.
9. Once you have completed the configuration, navigate back to the 'Dashboard' page to confirm. You can validate your channel configuration by viewing the live data. **NOTE: you must wait at least one 'Query Period' before the live data will update.**

 **KTA-387**
v0.9

[Dashboard](#) [Channels](#) [System](#) [Logs](#)

Live Telemetry Dashboard

Channel Status

STATUS	CHANNEL NAME	CURRENT VALUE
● Online	Live Temperature C	27.06 C
● Online	Live Temperature F	80.71 F

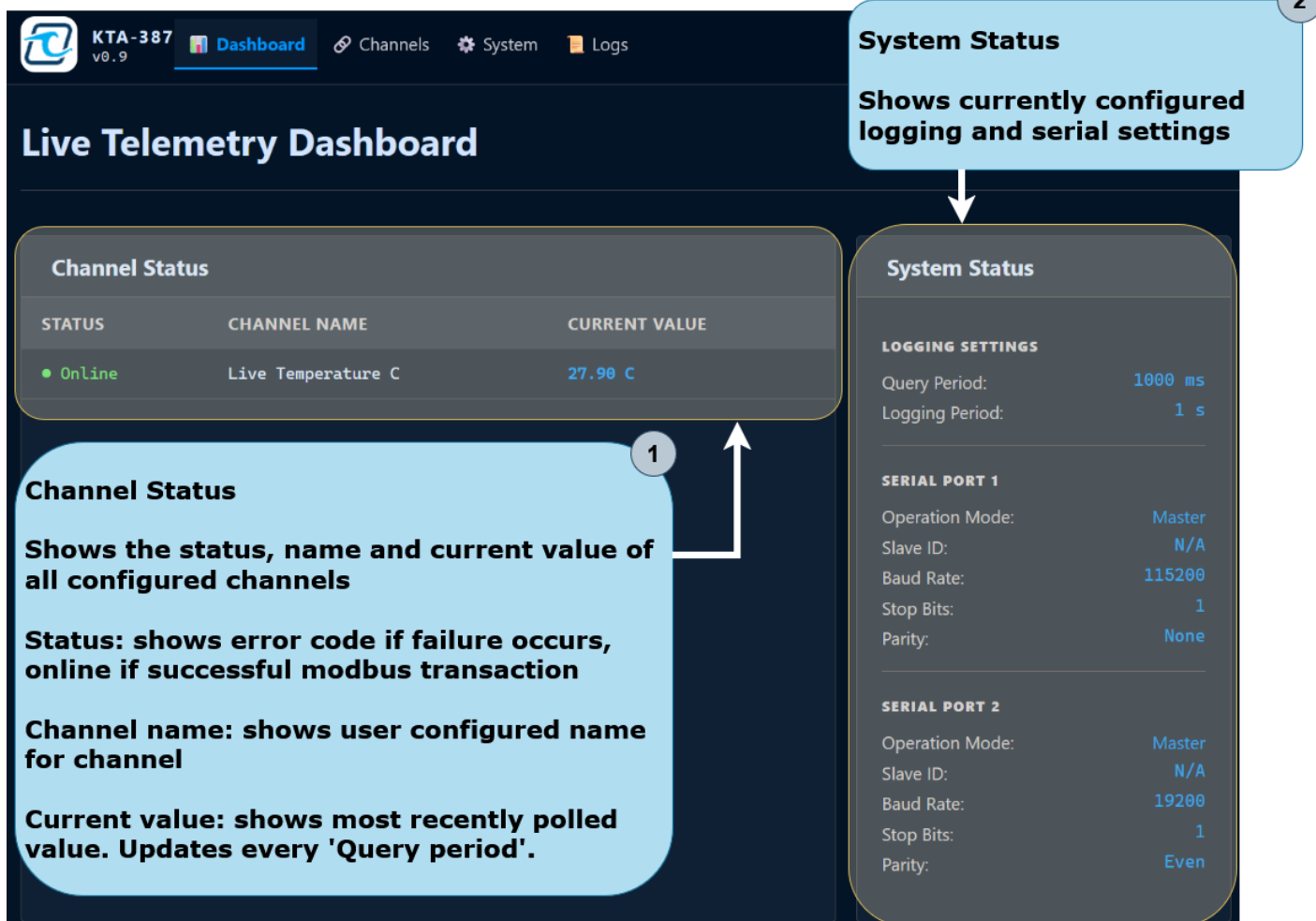
System Status

LOGGING SETTINGS
Query Period: 1000 ms
Logging Period: 1 s

SERIAL PORT 1
Operation Mode: Master
Slave ID: N/A
Baud Rate: 115200
Stop Bits: 1
Parity: None

SERIAL PORT 2
Operation Mode: Master
Slave ID: N/A
Baud Rate: 19200
Stop Bits: 1
Parity: Even

5 Configuration Webpage



System Status
Shows currently configured logging and serial settings

Channel Status
Shows the status, name and current value of all configured channels

Status: shows error code if failure occurs, online if successful modbus transaction

Channel name: shows user configured name for channel

Current value: shows most recently polled value. Updates every 'Query period'.

System Status

LOGGING SETTINGS

Query Period: 1000 ms
Logging Period: 1 s

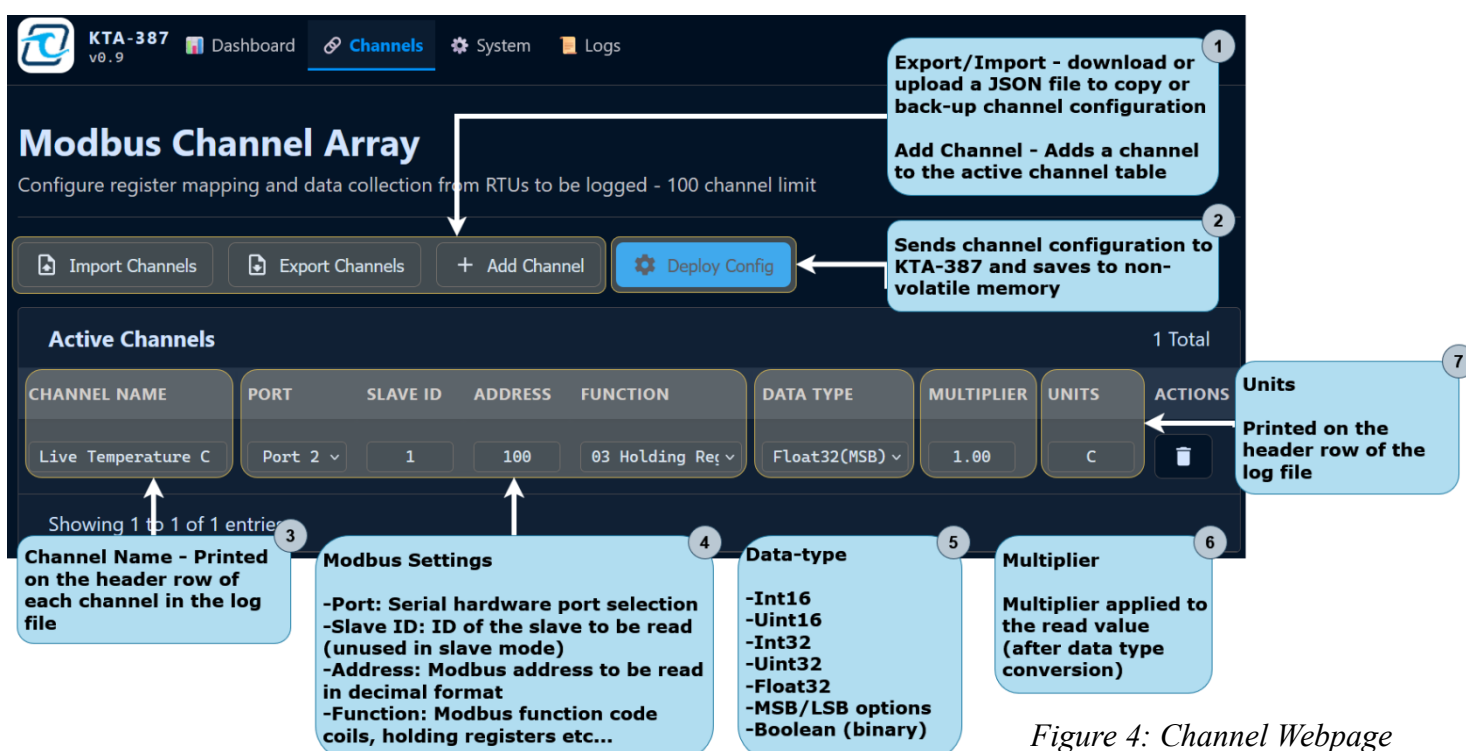
SERIAL PORT 1

Operation Mode: Master
Slave ID: N/A
Baud Rate: 115200
Stop Bits: 1
Parity: None

SERIAL PORT 2

Operation Mode: Master
Slave ID: N/A
Baud Rate: 19200
Stop Bits: 1
Parity: Even

Figure 5: Dashboard Webpage



Modbus Channel Array
Configure register mapping and data collection from RTUs to be logged - 100 channel limit

Export/Import - download or upload a JSON file to copy or back-up channel configuration

Add Channel - Adds a channel to the active channel table

Sends channel configuration to KTA-387 and saves to non-volatile memory

Active Channels 1 Total

CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS
Live Temperature C	Port 2	1	100	03 Holding Reg	Float32(MSB)	1.00	C	

Channel Name - Printed on the header row of each channel in the log file

Modbus Settings

- Port: Serial hardware port selection
- Slave ID: ID of the slave to be read (unused in slave mode)
- Address: Modbus address to be read in decimal format
- Function: Modbus function code coils, holding registers etc...

Data-type

- Int16
- UInt16
- Int32
- UInt32
- Float32
- MSB/LSB options
- Boolean (binary)

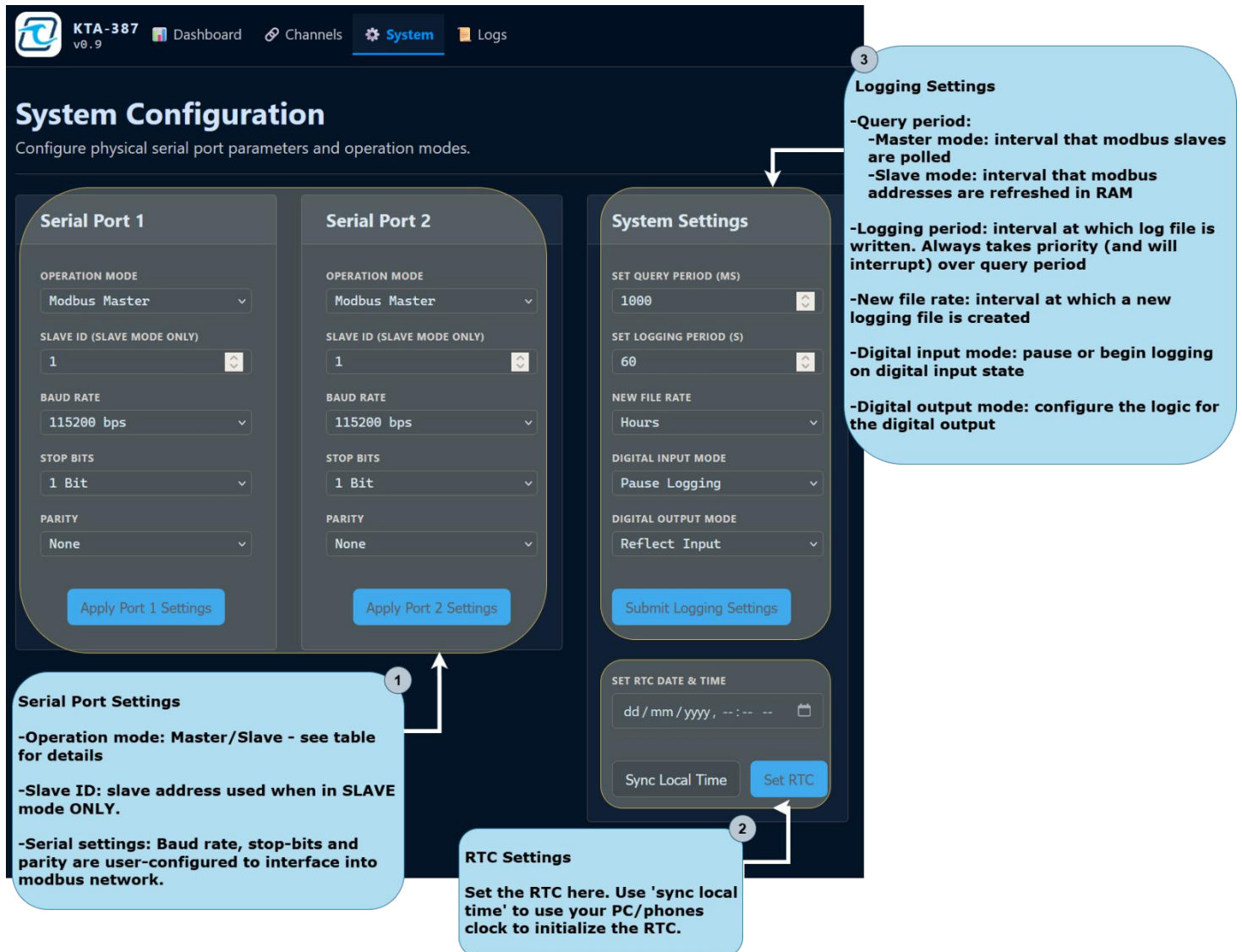
Multiplier

Multiplier applied to the read value (after data type conversion)

Units

Printed on the header row of the log file

Figure 4: Channel Webpage



System Configuration
Configure physical serial port parameters and operation modes.

Serial Port 1

OPERATION MODE: Modbus Master

SLAVE ID (SLAVE MODE ONLY): 1

BAUD RATE: 115200 bps

STOP BITS: 1 Bit

PARITY: None

Apply Port 1 Settings

Serial Port 2

OPERATION MODE: Modbus Master

SLAVE ID (SLAVE MODE ONLY): 1

BAUD RATE: 115200 bps

STOP BITS: 1 Bit

PARITY: None

Apply Port 2 Settings

System Settings

SET QUERY PERIOD (MS): 1000

SET LOGGING PERIOD (S): 60

NEW FILE RATE: Hours

DIGITAL INPUT MODE: Pause Logging

DIGITAL OUTPUT MODE: Reflect Input

Submit Logging Settings

SET RTC DATE & TIME: dd / mm / yyyy, -- :-- --

Sync Local Time Set RTC

Serial Port Settings

- Operation mode: Master/Slave - see table for details
- Slave ID: slave address used when in SLAVE mode ONLY.
- Serial settings: Baud rate, stop-bits and parity are user-configured to interface into modbus network.

RTC Settings

Set the RTC here. Use 'sync local time' to use your PC/phones clock to initialize the RTC.

Logging Settings

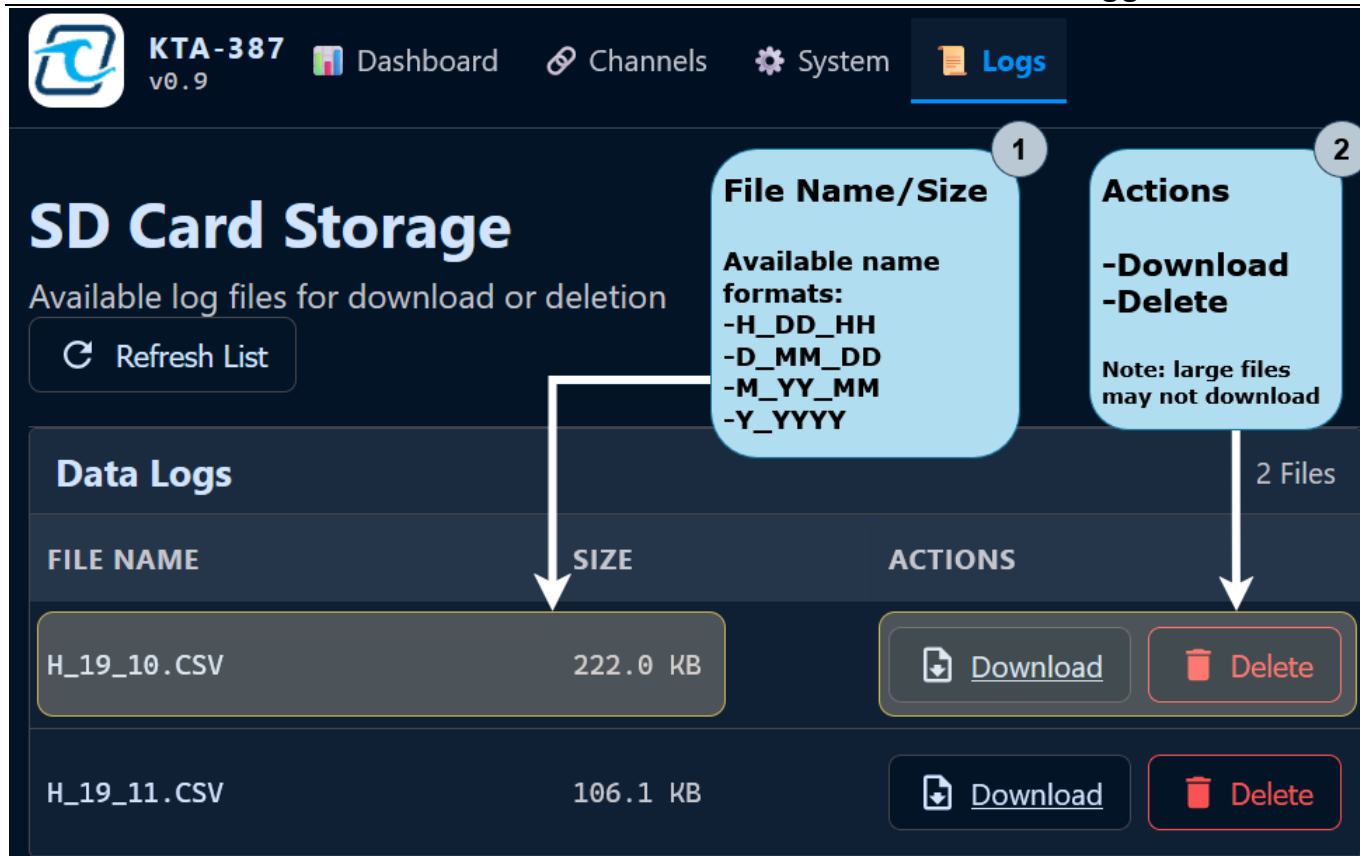
- Query period:
 - Master mode: interval that modbus slaves are polled
 - Slave mode: interval that modbus addresses are refreshed in RAM
- Logging period: interval at which log file is written. Always takes priority (and will interrupt) over query period
- New file rate: interval at which a new logging file is created
- Digital input mode: pause or begin logging on digital input state
- Digital output mode: configure the logic for the digital output

Figure 6: System Configuration Webpage

If both ports are in slave mode, the modbus addresses are shared. When both are in slave mode, you must use separate memory addresses regardless of slave ID:

Active Channels								2 Total
CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS
HREG	Port 1	1	0	03 Holdin	Int16(MSE	1.00		
HREG	Port 2	1	0	03 Holdin	Int16(MSE	1.00		
Showing 1 to 2 of 2 entries								

Active Channels								2 Total
CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS
HREG	Port 1	1	0	03 Holdin	Int16(MSE	1.00		
HREG	Port 2	1	1	03 Holdin	Int16(MSE	1.00		
Showing 1 to 2 of 2 entries								



The screenshot shows the 'Logs' tab of the KTA-387 web interface. At the top, there's a navigation bar with 'Dashboard', 'Channels', 'System', and 'Logs' (selected). Below the navigation bar, the 'SD Card Storage' section is visible, with a 'Refresh List' button. The 'Data Logs' section displays a table of log files. Two callouts are present: Callout 1 points to the 'File Name/Size' column, showing available name formats: -H_DD_HH, -D_MM_DD, -M_YY_MM, and -Y_YYYY. Callout 2 points to the 'Actions' column, showing '-Download' and '-Delete' buttons, with a note: 'Note: large files may not download'.

FILE NAME	SIZE	ACTIONS
H_19_10.CSV	222.0 KB	Download Delete
H_19_11.CSV	106.1 KB	Download Delete

Figure 7: Logs Webpage

The download feature on the logs webpage is designed to handle **small to average file loads only**. If your file is $\geq 100\text{MB}$, the KTA-387 may struggle to deliver the whole file without a download interruption and/or failure. See [table 8 in section 6.3](#) of this manual for more information on how to set the log rate and new file rate.

In the event you are dealing with file payloads that are too large, you can try the following:

- Increase the logging period – fewer logs per file
- Decrease the new file rate – data is spread across more (smaller) files
- Take the SD card out and load to your device manually

6 Logging Characteristics

6.1 Logging Files

Active Channels								2 Total
CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS
Channel 1	Port 2 ▾	1	100	03 Holding Reg ▾	Float32(MSB) ▾	1.00	°C	
Channel 2	Port 1 ▾	1	0	03 Holding Reg ▾	Int16(MSB) ▾	1.00		

Showing 1 to 2 of 2 entries

Channels sorted by network.
I.e all port 1 channels, then port 2
channels

	A	B	C	D
1	Date	Time	Channel 2 (-)	Channel 1 (C)
2	15/06/2026	11:06:28	ERR: 0xE4	25.7815
3	15/06/2026	11:06:30	ERR: 0xE4	25.7752
4	15/06/2026	11:06:32	ERR: 0xE4	25.7856
5	15/06/2026	11:06:34	ERR: 0xE4	25.7647
6	15/06/2026	11:06:36	ERR: 0xE4	25.7137
7	15/06/2026	11:06:38	ERR: 0xE4	25.7027
8	15/06/2026	11:06:40	ERR: 0xE4	25.6697
9	15/06/2026	11:06:42	ERR: 0xE4	25.6846
10	15/06/2026	11:06:44	ERR: 0xE4	25.6813
11	15/06/2026	11:06:46	ERR: 0xE4	25.6688
12	15/06/2026	11:06:48	ERR: 0xE4	25.6514
13	15/06/2026	11:06:50	ERR: 0xE4	25.6592
14	15/06/2026	11:06:52	ERR: 0xE4	25.6458
15	15/06/2026	11:06:54	ERR: 0xE4	25.6464
16	15/06/2026	11:06:56	ERR: 0xE4	25.664
17	15/06/2026	11:06:58	ERR: 0xE4	25.6585
18	15/06/2026	11:07:00	ERR: 0xE4	25.638
19	15/06/2026	11:07:02	ERR: 0xE4	25.643
20	15/06/2026	11:07:04	ERR: 0xE4	25.6563
21	15/06/2026	11:07:06	ERR: 0xE4	25.6376
22	15/06/2026	11:07:08	ERR: 0xE4	25.6472
23	15/06/2026	11:07:10	ERR: 0xE4	25.645
24	15/06/2026	11:07:12	ERR: 0xE4	25.6185
25	Date	Time	Channel 2 (-)	Channel 1 (°C)
26	15/06/2026	11:07:16	ERR: 0xE4	25.6698
27	15/06/2026	11:07:18	ERR: 0xE4	25.6448
28	15/06/2026	11:07:20	ERR: 0xE4	25.6362
29	15/06/2026	11:07:22	ERR: 0xE4	25.6342

Header Row

Date,
Time,
Channel Name (Unit)

Channel Data

Floating points will log up to 4
decimal places.
If an error occurs, the modbus
response code is logged. (E4 =
Timeout)

Refer to table 8 for verbose error codes

Re-print Header Row

In the event channels are
changed, the current log file will
have the headers re-printed

Figure 8: Logs Example

6.2 Logging Parameters

System Setting	Description
Logging Period	The period at which the channel data is appended to the current log file. Or added to new file – see new file rate. <u>The logging period should be multiple times longer than the query period to avoid data loss or invalid data.</u>
Query Period	Master mode: The period at which the modbus slaves are polled. New period begins once last channel on port X is polled and complete. So, if polling all channels takes X seconds, the time between first channel polls will be Xs + query period. Slave mode: The period at which the values stored in the modbus addresses are refreshed into the microcontroller RAM (NOT APPENDED TO LOG)
New File Rate	Rate of new file generation. Hourly – “H_DD_HH.csv” DD_HH are populated by RTC Daily – “D_MM_DD.csv” MM_DD are populated by RTC Monthly – “M_YY_MM.csv” YY_MM are populated by RTC Yearly – “Y_YYYY.csv” YYYY are populated by RTC

Table 5

Mode	Function Description
Master	In this mode, the data logger acts as the network master to actively retrieve data from external devices. • Polling Mechanism: The KTA-387 polls user-configured slave devices and addresses based on the defined channels. • Data Buffering: Slaves are polled once per "query period," and the retrieved data is temporarily stored in the KTA-387 RAM. • Logging Behaviour: When logging begins, the KTA-387 writes the most recently buffered RAM value to the log. • Priority: Logging operations always take priority over polling and will interrupt an active poll if a conflict occurs.
Slave	In this mode, the data logger acts as a network slave, allowing external devices (Modbus masters) to write data directly to it. If both ports are in slave mode, the addresses are shared. So, in this case, ensure each port uses different memory addresses in the channels. • Memory Initialization: Configuring channels initializes the corresponding Modbus addresses within the KTA-387 memory. • Data Input: An external Modbus Master (such as a PLC) writes data directly into these pre-defined addresses. • Logging Behaviour: When logging begins, the KTA-387 captures the current values held in RAM (from the last query period) and writes them to the log.

Table 6

Channel Setting	Description																			
	Master Mode	Slave Mode																		
Address	Address to be read from a slave device. Address offset is configured automatically. I.e. if function code is 0x03 (HREG), the address field begins from &40000+.	Internal modbus address to be initialised in memory and logged. Only the addresses configured by the channels will exist in memory.																		
Function Code	Supported modbus function codes -0x01 Read single coil -0x02 Read single input status -0x03 Read single holding register -0x04 Read single input register	Supported modbus function codes -0x05 Write single coil -0x06 Write single register -0x0F Write multiple coils -0x10 Write multiple registers																		
Datatype	The KTA-387 offers several datatype selections to conveniently convert modbus data into desired formats to be logged. -Int16 (MSB/LSB) -UInt16 (MSB/LSB) -Int32 (MSB/LSB) -UInt32 (MSB/LSB) -Float32 (MSB/LSB) -Boolean MSB = most significant byte first LSB = least significant byte first																			
Multiplier	User-configurable multiplier that is applied to the channel data after datatype conversion . Example: Active Channels 8 Total <table><tr><th>CHANNEL NAME</th><th>PORT</th><th>SLAVE ID</th><th>ADDRESS</th><th>FUNCTION</th><th>DATA TYPE</th><th>MULTIPLIER</th><th>UNITS</th><th>ACTIONS</th></tr><tr><td>Live Temperature C</td><td>Port 2 ▾</td><td>1</td><td>100</td><td>03 Holding Reg ▾</td><td>Float32(MSB) ▾</td><td>0.1</td><td>°C</td><td></td></tr></table> 1. Modbus raw data polled (HREG: &100 and &101 (32-bit so 2 registers)) 2. Perform data-type conversion (value = (&100 << 16) \$101) 3. Multiplier applied (value = value * multiplier)		CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS	Live Temperature C	Port 2 ▾	1	100	03 Holding Reg ▾	Float32(MSB) ▾	0.1	°C	
CHANNEL NAME	PORT	SLAVE ID	ADDRESS	FUNCTION	DATA TYPE	MULTIPLIER	UNITS	ACTIONS												
Live Temperature C	Port 2 ▾	1	100	03 Holding Reg ▾	Float32(MSB) ▾	0.1	°C													

Table 7

6.3 Notes on Log Rate and New File Rate

Log Rate	Log Rate (Sec)	Logs/Hour	Logs/Day	Logs/Month
1sec	1	3600	86400	2592000
5sec	5	720	17280	518400
10sec	10	360	8640	259200
30sec	30	120	2880	86400
1min	60	60	1440	43200
10min	600	6	144	4320
30min	1800	2	48	1440
1hour	3600	1	24	720
6hour	21600	-	4	120
12hour	43200	-	2	60
24hour	86400	-	1	30

Cells highlighted in yellow indicate logging rates with over 65535 rows per file. This is unsuitable for some spreadsheet programs. These files may exceed the file size that the webpage download can handle.

Table 8

Choosing a logging rate and new file creation rate must be done with the application in mind. Including the data processing after the data has been logged and is to be analysed or graphed on a computer.

In the simplest instance, the data can be imported to a spreadsheet program such as Microsoft Excel or Open Office Calc. Please note that Open Office Calc and older versions of Excel have a limit of 65535 rows in a single file, therefore, if logging files will have more than 65535 loggings it is wise to either decrease the logging rate or shorten the new file creation period.

It should also be noted that the more loggings there are, the longer it will take to open and analyse files.

7 RTC Battery

The CR1225 battery can be replaced or inserted by opening the enclosure. The enclosure has 2 orange tabs on either end which will 'un-latch' the 2 parts. Once the PCB is exposed, the CR1225 battery slot is revealed. You needn't remove the PCB from the top part of the enclosure.

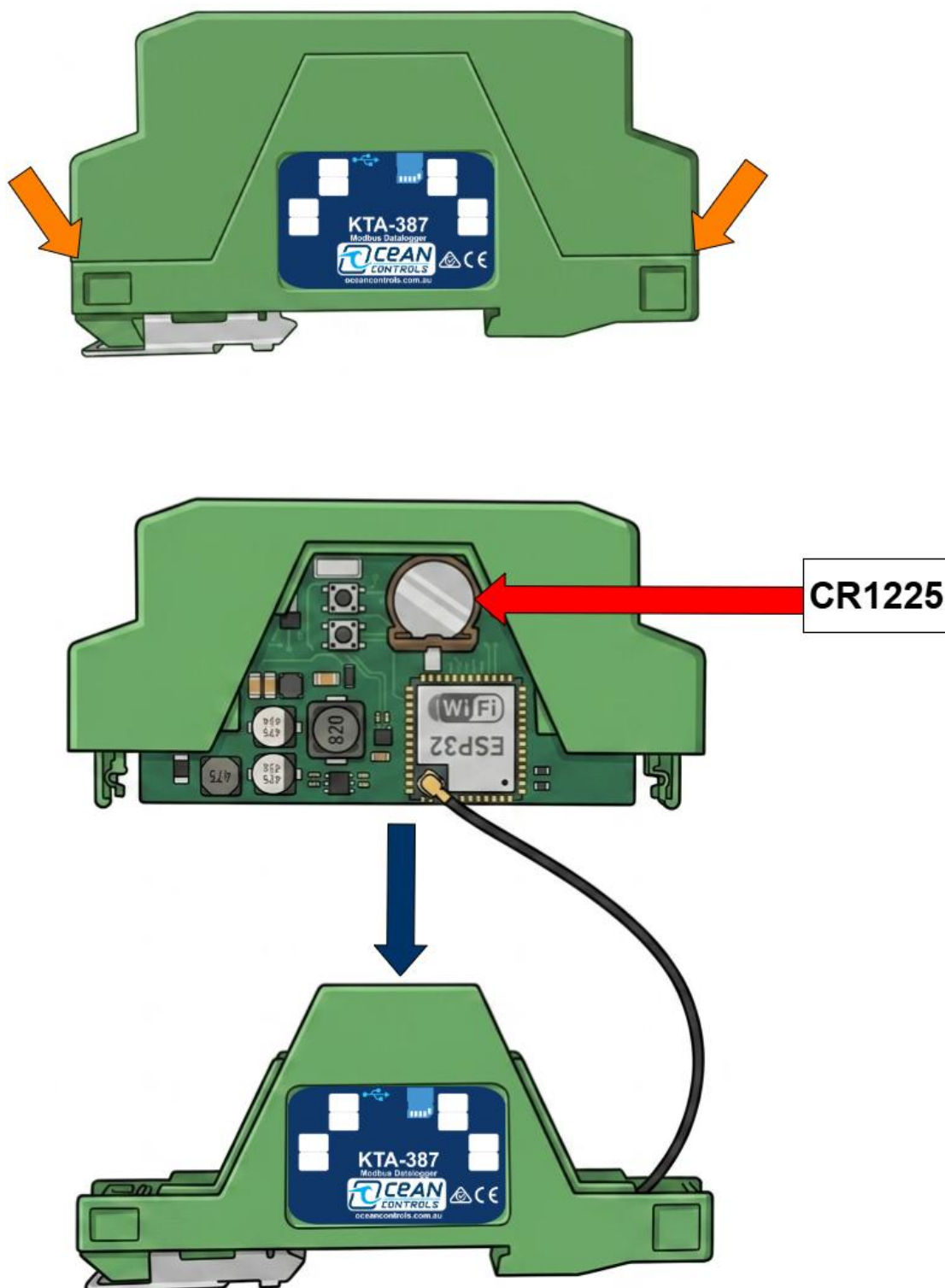


Figure 9

8 Troubleshooting

8.1 Error Codes

Error Code	Description	Troubleshooting
0xE3	Unexpected response	Check communication parameters (baud-rate parity etc...)
0xE4	Modbus request submitted, no response received. Timeout period is 1000ms.	Check the wiring connection, power and communication parameters (baud-rate, parity etc...)
0xE5	Connection lost	Check the wiring connection and device power. Connection is severed mid-transaction.
0x01	Illegal function – device does not support the used function code	Check channel configuration function code (03 HREG, 01 COIL etc...)
0x02	The requested modbus address does not exist on the slave	Check register address and data type is correct. 'Off by 1' is common error
0x03	Illegal value. Value not in range	Check the data-type, memory address and slave device

Table 9

8.2 Factory reset

To perform a full factory reset, you can use the button mounted on the PCB.

The reset will not remove the channel configuration. This must be done on the webpage.

The reset is limited to system configuration parameters like the serial and logging settings.

1. Press and hold the button for 10s, or until all LEDS are RED.
2. Release the button and allow a few seconds for the reset to complete.