Data Management Unit DMU703

Vaisala Data Management Unit DMU703 is specifically designed and built to be the brains of Vaisala Road Weather Station RWS200. DMU703 handles the storage, analysis, and reporting of observation data.

Features

- Performs advanced algorithms based on sensor measurements
- Storage for all observations, configurations, serial numbers, and maintenance history
- Reliable in harsh environments
- Industry-proven components that guarantee reliability and extend the life span
- Built-in web user interface
- GPS receiver for accurate time synchronization
- Reliable internal communications from Ethernet architecture

Effective Data Management

DMU703 manages data flow, performs algorithm calculations, stores observation data, and provides a web-based user interface for viewing data remotely and for controlling the system.

In addition to managing realtime data flow, DMU703 also handles sensor calibration data, maintenance activities, and configurations, including serial numbers and software versions. To have this information available both locally and remotely helps in troubleshooting and maintaining the weather station.

DMU703 contains a local database which greatly improves data reliability by storing observation data. The data is not lost even if the external communication network is down for a long period of time.

Advanced Algorithms

DMU703 contains the algorithms that make RWS200 more than a collection of road weather sensors. The algorithms process the observation data from the atmospheric and road weather sensors and provide accurate data to support decision making.

Web User Interface

A web user interface provides direct access to the weather station. The user interface is available locally and remotely and it is used for station setup and maintenance, as well as for viewing observation data and reports.

Looking Ahead

A DMU703 unit purchased today can be updated either remotely or in the field to support new features and functions as they are designed by Vaisala.

Technical Data

Operating Environment

Operating temperature	−40 … +60 °C (−40 …+140 °F)
Storage temperature	−60 … +80 °C (−58 …+176 °F)
Operating humidity	5 … 95 %RH, non-condensing

Powering Specifications

Operating voltage	9 … 32 VDC
Maximum power consumption	3 W

Computer Specifications

Processor	ARM Cortex A8
Memory	512 MB DDR3 RAM, 2 GB flash
Operating system	Linux
RTC backup battery	CR2032
Web services	HTTPS

Mechanical Specifications

Dimensions (H × W × L)	126 × 55 × 127 mm (4.96 × 2.17 × 5.00 in)
Weight	0.4 kg (0.8 lb)
Mounting	DIN rail 35 mm (1.4 in)
Materials	
Screws, washers, DIN rail locking piece	Stainless steel AISI 316
Frame profile	Aluminum EN AW-6060 T6
Side plates	Plastic PC/ABS

Test Compliance

Vibration	IEC 60068-2-6	0.2 g (0.007 oz), 62 … 200 Hz 5 … 62 Hz, 1.5 mm (0.06 in) displacement
Rough handling	IEC 60068-2-31	Drop height 50 cm (19.69 in)
Shock	IEC 60068-2-27	3.0 g (0.106 oz) Pulse duration 11 ms with 3 pulses in each direction.
Dry heat	IEC 60068-2-2	+60 °C (+140 °F)
Damp heat	IEC 60068-2-78	+40 °C (+104 °F), 93 %RH

EMC Compliance

EMC (industrial environment)	EN/IEC 61326-1
Conducted emissions	CISPR32/EN 55032/Class B
Radiated emissions	CISPR32/EN 55032/Class B
Electrical safety	EN/UL/IEC 61010-1

Inputs and Outputs

Ethernet	
Ports	ETH 0, ETH 1
Supported standard	IEEE 802.3
Physical layer	Base-T
Data rate	10/100 Mbps
Connectors	RJ45 with link LEDs
USB	
Ports	4 (reserved)
Supported standard	USB 2.0
Signaling	High speed
Connectors	Standard-A
RS-232 Serial	
Ports	COM 1, COM 5 (configurable)
Signals	COM 1: RXD, TXD, CTS, RTS, DTR, DSR, DCD, and RI COM 5: RXD, TXD, CTS, and RTS
Connectors	Phoenix Contact DFMC 1,5/3-ST-3,5-LR
RS-485 Serial	
Ports	COM 5 (configurable), COM 6, COM 7
Signals	D+/D− for all ports COM 5 also has R+/R−
Connectors	1 × Phoenix Contact DFMC 1,5/3-ST-3,5-LR 1 × RJ45 (expansion bus)
RS-485 Serial, Isolated	
Ports	COM 2, COM 3
Signals	R+/R−/T+/T−
Connectors	Phoenix Contact DFMC 1,5/3-ST-3,5-LR
Other Serial Ports	
1 × CAN (reserved)	Connector: RJ45
1 × SDI-12 (reserved)	Connector: Phoenix Contact DFMC 1,5/3-ST-3,5-LR
Analog	
Lines	CH A, CH B
Frequency input signal	1 Hz … 20 kHz, 2.5 … 14 VDC, or 10 mV … 15 VDC
Excitation voltage signal	0 … 12 VDC at 20 mA
Fast input high signal	0 … 1.8 VDC, 12-bit ADC
Fast input low signal	0 … 1.8 VDC, 12-bit ADC
Single-ended/Differential measurement mode	Ground
Connectors	Phoenix Contact DFMC 1,5/3-ST-3,5-LR
I/O Digital	
Ports	4 × input, 4 × output
Input signal	0 … 30 VDC
Output signal	Open collector, maximum load 30 VDC at 1 A
Connectors	Phoenix Contact DFMC 1,5/3-ST-3,5-LR

Technical Data

Data Reports

Polled interfaces	DATEX II NTCIP Vaisala DTO XML Vaisala MES 14 Vaisala MES 16
Pushed interfaces	Images Vaisala DTO XML Vaisala MES 14 Vaisala MES 16
Station reports	Station summary report Event log
Road surface state	Vaisala classes EN 15518-3 classes

GPS Receiver Specifications

Receiver type	50-channel GPS L1 frequency
Supported standards	SBAS: WAAS, EGNOS, MSAS
Time-to-first-fix	Cold/Warm start 26 s
Horizontal position accuracy [1)]	2.5 m (8.2 ft)
Antenna connector	SMA (female)

1) LEP, 50 % 24-hour static, -130dBm

WLAN Transmitter Specifications

Supported standards	IEEE 802.11 b, g, n
Transmit power	20 dBm, 11 Mbps, b 14.5 dBm, 54 Mbps, g 12.5 dBm, 65 Mbps, n
Acceptance	FCC (USA), IC (Canada), CE (Europe) Contains FCC ID: TFB-TIWI1-01 Contains IC: 5969A-TIWI101
Antenna connector	RP-SMA (female)

Spare Parts and Accessories

Spare Part or Accessory	Order Code
DMU703-RWS unit including: • Ethernet cable 40 cm (15.75 in) • Phoenix Contact DFMC 1,5/3-ST-3,5-LR 6-pin cable connector (2 pc) • Phoenix Contact DFMC 1,5/5-ST-3,5-LR 10-pin cable connector (5 pc)	DMU703-RWSSP

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