Vaisala RWS200 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 manages data flow, performs algorithm calculations, and provides a web-based user interface for viewing data remotely and for controlling the system.

DMU703 contains an energy-efficient ARM processor and runs a Linux operating system.

Effective Data Management

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

Because road weather stations are often located in remote areas, a local database greatly improves data reliability by storing observation data. This ensures that all data is available even if communication breaks occur between the station and a data collection system.

DMU703 is also responsible for storing and analyzing observation data.

Advanced Algorithms

DMU703 contains the algorithms that make RWS200 more than a collection of road weather sensors. The algorithms analyze 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 road weather station in a single-site application, or as a backup connection to a standard road weather data collection system. The user interface is meant for station setup and maintenance, as well as for viewing observation data and reports.

Looking Ahead

Vaisala designed DMU703 with components that are optimized for the system and that will be readily available for years to come. This means that over long-term, DMU703 will continue to provide a return on investment.

RWS200 Data Management Unit

Benefits of RWS200 DMU703

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

Technical Data

General

Operating temperature range	-40 ...+60 °C (-40 ...140 °F)
Storage temperature range	-60 ...+80 °C (-58 ...176 °F)
Operating humidity range	5 ...93 %RH non-condensing
MATERIALS	
Screws, washers, DIN rail locking piece	Stainless steel AISI 316
Frame profile	Aluminum EN AW-6060 T6
Side plates	Plastic PC/ABS
Size (H x W x D)	126 × 55 × 127 mm
	(5.0 × 2.2 × 5.0 in)
Weight	0.4 kg (0.8 lb)
Mounting	DIN rail 35 mm (1.4 in)

Power

Powering	8 ...32 VDC
Connector	Phoenix Contact DFMC 1,5/5-ST-3,5-LR
Max. power consumption	3 W
LEDs	Status

Test Method Standards

Vibration	IEC 60068-2-6
Rough handling	IEC 60068-2-31
Shock	IEC 60068-2-27
Dry heat	IEC 60068-2-2
Damp heat	IEC 60068-2-78
Corrosion and salt mist	VDA 621-415
EMC (industrial environment)	EN/IEC 61326-1
Conducted emissions	CISPR22/EN 55022/Class B
Radiated emissions	CISPR22/EN 55022/Class B
Electrical safety	EN/UL/IEC 60950-1/-22

Ethernet

Ports	2 pcs
Standard	IEEE 802.3
Physical layer	Base-T
Data rate	10/100 Mbps
Connectors	RJ45 with link LEDs

USB

Ports	4 pcs
Standard	USB 2.0
Signaling	High speed
Connectors	Standard-A

RS-232 Serial

Ports	2 pcs
Signals	RXD, TXD, CTS, RTS for both ports
	One port also has DTR, DSR, DCD, RI
	(alternative for one RS-485 port)
Connectors	Phoenix Contact DFMC 1,5/5-ST-3,5-LR

RS-485 Serial

Ports	3 pcs
Signals	D+/D- for all three ports
	One port also has R+/R-
	(alternative for one RS-232 port)
Connectors	1 × Phoenix Contact DFMC 1,5/5-ST-3,5-LR
	and 1 × RJ45 (expansion bus)

RS-485 Serial – Isolated

Ports	2 pcs
Signals	R+/R-/T+/T-
Connectors	Phoenix Contact DFMC 1,5/5-ST-3,5-LR

Analog Inputs

Lines	2 pcs
Frequency input signal	1 Hz ...20 kHz,
	or 2.5 ...14 VAC,
	or 10 mV ...15 VAC
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 1,5/5-ST-3,5-LR

I/O Digital

Lines	4 × input and 4 × output
Input signal	0 ...30 VDC, counter 0 ...100 Hz
Output signal	Open collector, max. load 30 VDC at 1 A
Connectors	Phoenix Contact DFMC 1,5/5-ST-3,5-LR

Other Serial Communication

CAN	1 port
Connector	RJ45
SDI-12	1 port
Connector	Phoenix Contact DFMC 1,5/5-ST-3,5-LR

GPS

Receiver type	50-channel GPS L1 frequency
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	Female SMA

WLAN

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	Female SMA

Other Details

Processors	ARM Cortex A8
Memory	512 MB DDR3 RAM, 2 GB flash
Operating system	Linux
RTC backup battery	CR1220
Web services	HTTPS

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[1] LEP, 50% 24-hour static, -130 dBm

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