



Class 1 radar for event monitoring and flow in flumes and weirs

MCERTS VEGA radar solutions



Looking Forward **VEGA**

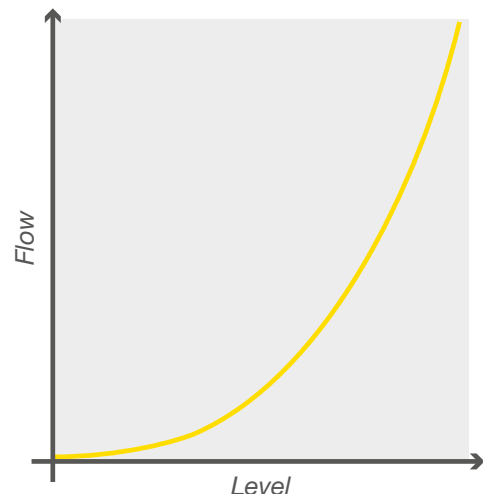
RADAR TECHNOLOGY

If you want highly accurate measurements of event duration and open channel flow with no data errors, it is worth exploring radar technology further. These devices can handle heavy condensation on a misty morning, sensor contamination or gale force winds, foaming and turbulent surfaces and the effects of 'solar gain'.

80 GHz radar sensors are highly focused and accurate. They are available as MCERTS stand-alone transmitters with built-in flow computation to the latest ISO standards, or use with VEGAMET 860 series controllers for additional local displays, totalisation, data logging and outputs.

Why use radar technology for better data?

Due to the exponential nature of open channel flow calculations, a flow error of 10% or more can easily arise from a very small inaccuracy in the level measurement. For legacy non-contact devices 'work arounds' such as sun shades, external temperature sensors or 'stilling tubes' can be used, but this can get expensive and take up valuable engineering resources. However, radar technology maintains its accuracy in all conditions. Of course some performance improvements may be marginal, others more pronounced, but when factored over a large number of measurement sites, it can mean significant savings.



MCERTS Class 1 80 GHz Compact Radar

Unique features: Certified up to 5m range, with the option to use VEGAPULS radars as stand-alone MCERTS monitors, or combined with a local controller. They feature a wireless VEGA Tools App to set up or take remote readings for either radars and controllers. They also offer the capability for two flow measurements into one controller.

These features deliver flexibility for difficult to access below-ground assets, remote battery powered telemetry and multi-point monitoring. Following rigorous tests and assessments overseen by the Environment Agency, CSA Group and WRC, they have attained the highest Class 1 accuracy in their category.





VEGAPULS Compact Class 1 Radar Transmitters

These MCERTS smart, compact 80 GHz level transmitters are specially designed for applications in the water industry, to provide maximum accuracy, resilience and performance, while also perfectly adapting to their environment. This could be a sealed, IP68 encapsulated transmitter with side cable entry for low headroom, or perhaps a device with a conventional cable connection housing and in-head display. They all feature secure Bluetooth communications to our award winning VEGA Tools App, which can offer ‘look but don’t touch’ access for all devices to read a process value. A range of mounting accessories are also available to make deployment and installation simpler than ever. They can be used as a stand-alone device with a direct output for flow measurement through a flume or weir structure, or teamed up with a controller; they all offer certification options for ATEX (*UKEX pending*) Zone 0 and Zone 1.



Left to right: VEGAPULS C21, C22, 21 and 31 radar level and open channel flow transmitters

VEGAMET 861 and 862 Controllers

These single and dual input controllers are implemented when additional functionality is required from the system - this might be a physical display, totalised flow, relay alarm set points, outputs for totalisation and sampling, localised datalogging or data inputs for telemetry platforms.

The VEGAMET 800 series offers best in class data logging capabilities with an 8GB SD card supplied with the controller – capable of recording 185 days worth of data at 1 minute intervals. These controllers feature a unique colour-changing screen - providing clear local indication for operators against real-time flows, system levels or relay alarm status in relation to programmed set points. ATEX (*UKEX pending*) versions are available for when sensors are in Zone 0 applications.



VEGAMET 862 Dual input controller



Class 1 performance in all conditions

Many level and flow applications are subjected to environmental conditions, which can change quickly and be unpredictable, typically during storm events, when accurate, actionable data is at its most valuable.

- Resilient operation in harsh measuring conditions – decisive actions
- Cleaner level and flow data – better analysis and planning
- Reliable with condensation, ragging, build up or mist – less maintenance
- Simple installation engineering – saves time and cost

5 metre Class 1 measurement range

MCERTS level and flow instruments need to adapt to an ever increasing variety of measurement situations, and some have accessibility issues. Current ultrasonic-based systems require siting close to the liquid surface to maintain certified accuracy, which can create safety issues.

- Enables easy to reach mounting positions – increases safety
- Narrow focusing measurement beam - less influence from internal structures
- More flexibility of mounting positions – reduces engineering costs
- Quicker, easier installation – faster and safer deployment of sensors

Stand-alone Class 1 transmitters

MCERTS Event Duration Monitoring (EDM) UMON 3 applications require measurement of the lowest weir spill point to storm tanks. These sites are often in remote locations where the provision of power is cost prohibitive.

- Loop powered transmitter, no box on the wall – simpler installation
- Battery optimised – ideal for remote telemetry and datalogging
- 32-Point flow calculation - flow direct from the compact transmitter
- Minimise technology infrastructure – smaller environmental footprint
- In-head display and Bluetooth communications – real time readout

APPLICATIONS: CLASS 1 RADAR TRANSMITTERS AND CONTROLLERS

Optional single or dual controllers

Controllers can be added for functionality e.g. as a traditional field mounted flow indication and control system. This can prove useful as MCERTS measurements diversify, such as UMON3 monitoring spills points in and out of storm tanks, as well as the adjacent open channel flow measurements.

- Large display with programmable screen colour alarms – easy to see and action
- 1 or 2 sensor inputs, dual display, differential and totalisers – cost saving and versatile
- Integrated datalogging via 8GB SD card – long term back up data
- Bluetooth controller and sensors as standard - easy, quick and secure set up, HART capable for multi-parameter performance monitoring and notification



SYSTEM SPECIFICATIONS AND OPTIONS

	VEGAPULS C21 / C22	VEGAPULS 21	VEGAPULS 31
			
Sensor	Compact Class 1 radar transmitter	Compact Class 1 radar transmitter	Compact Class 1 radar transmitter
Measuring range <i>Certification range</i>	15 m 5 m	15 m 5 m	15 m 5 m
Deviation	≤ 2 mm	≤ 2 mm	≤ 2 mm
Beam angle	8 °	8 °	8 °
Measuring frequency	W-band (80 GHz technology)	W-band (80 GHz technology)	W-band (80 GHz technology)
Signal output	4 ... 20 mA/HART	4 ... 20 mA/HART	4 ... 20 mA/HART
Process fitting	Thread G1½, 1½ NPT, R1½	Thread G1½, 1½ NPT, R1½	Thread G1½, 1½ NPT, R1½
Process pressure	-1 ... +3 bar	-1 ... +3 bar	-1 ... +3 bar
Process temperature	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C
Ambient temperature	-40 ... +80 °C	-40 ... +70 °C	-40 ... +70 °C
Display/adjustment	No display Adjustment via VEGA Tools App, HART and PACTware Software	No display Adjustment via VEGA Tools App, HART and PACTware Software	Display with keypad Adjustment via Keypad, VEGA Tools App and PACTware Software
Bluetooth standard/ Effective range	Bluetooth 5.0 (downward compatible to Bluetooth 4.0 LE). 25 m	Bluetooth 5.0 (downward compatible to Bluetooth 4.0 LE). 25 m	Bluetooth 5.0 (downward compatible to Bluetooth 4.0 LE). 25 m
Operating Voltage	12 ... 35 V DC	12 ... 35 V DC	12 ... 35 V DC
Protection Rating	IP66/IP68 (3 bar) acc. to IEC 60529, Type 6P acc. to UL 50	IP66/IP67 acc. to IEC 60529, Type 4X acc. to UL 50	IP66/IP67 acc. to IEC 60529, Type 4X acc. to UL 50
Approvals	ATEX, IEC, LPR, MCERTS <i>UKEX/UKCA (Pending)</i>	ATEX, IEC, LPR, MCERTS <i>UKEX/UKCA (Pending)</i>	ATEX, IEC, LPR, MCERTS <i>UKEX/UKCA (Pending)</i>

	VEGAMET 861	VEGAMET 862
		
Sensor	Single input controller	Dual input controller
Sensor input Measured value transmission	1 x 4 ... 20 mA/HART	2 x 4 ... 20 mA/HART
Digital input	2 x digital condition input (e.g. pumps, valves, sampler, floats)	4 x digital condition input (e.g. pumps, valves, sampler, floats)
Relay output	4 x operating relay, one can be configured as fail safe relay	6 x operating relay, one can be configured as fail safe relay
Current output	1x 4...20mA output.	3x 4...20mA output.
Ambient temperature	Instrument in general -40 ... +60 °C Display (readability) -20 ... +60 °C	Instrument in general -40 ... +60 °C Display (readability) -20 ... +60 °C
Display/adjustment	Colour changing back light LCD 89 x 56 mm, digital and bargraph Adjustment via Keypad, Bluetooth VEGA Tools App and PACTware Software	Colour changing back light LCD 89 x 56 mm, digital and bargraph Adjustment via Keypad, Bluetooth VEGA Tools App and PACTware Software
Memory Card	microSDHC industrial, 8GB supplied	microSDHC industrial, 8GB supplied
Bluetooth standard	Bluetooth 5.0 (downward compatible to Bluetooth 4.0 LE).	Bluetooth 5.0 (downward compatible to Bluetooth 4.0 LE).
Operating Voltage Power consumption	Nominal voltage AC 100 ... 230 V Nominal voltage DC 24 ... 65 V Max. 13 VA; 4 W	Nominal voltage AC 100 ... 230 V Nominal voltage DC 24 ... 65 V Max. 19 VA; 7 W
Protection Rating	IP66/IP68 (3 bar) acc. to IEC 60529, Type 6P acc. to UL 50	IP66/IP67 acc. to IEC 60529, Type 4X acc. to UL 50
Approvals	ATEX, IEC, MCERTS UKEX/UKCA (Pending)	ATEX, IEC, MCERTS UKEX/UKCA (Pending)

PROVEN TECHNOLOGY

VEGA already has tens of thousands of VEGAPULS radars installed in applications as diverse as water supply and sewage treatment works, pumping stations, CSO's, AD units, sludge tanks, lime silos, open channel flow measurement and remote flood, river and reservoir telemetry gauging stations, to name but a few. Visit our website at www.vega.com and search for our water industry page for 3D interactive capability overviews.

Responsive service and support

We offer full support for both local and remote users, whether it be a quick support call, or a site visit from our sales or service team for advice, calibration or liaising with MCERTS inspectors. We also have a 24 hr global helpline and many resources available at www.vega.com/uk Register for **myVEGA** - your personal portal for contact, pricing, product information, ordering and further support.

Training

We have comprehensive hands-on training facilities available at our new headquarters in East Sussex, or we can come to your facilities. Our aim is to help you get the best out of the many features and capabilities of our sensors and controllers.



Certificate No.: SIRA MC210360/00

A copy of our certificate can be found at: www.csagroup.org

MCERTS Certified Products Continuous Water Monitoring System Part 3

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Looking Forward

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