ADT1

Remote transmission unit with data logger

Features

- Autonomous operation with a battery life of up to 5 years
- Increased data security thanks to integrated data logger
- Robust stainless metal housing
- (Degree of) protection up to IP68
- Includes free of licence fees KELLER software

Functions

- Remote transmission unit: Modules for LoRa or LTE-M / NB-IoT selectable
- Data logger: 28’000 measuring points as backup (for on-site reading)
- Sensor interfaces: Compatible with selected KELLER level probes and pressure transmitters
- Internal measured values: Barometer, temperature and moisture sensor, real-time clock (RTC) and battery capacity

Typical applications

- Ground water level monitoring
- Flood early warning system
- Tank level monitoring
- Pressure monitoring in IoT environment

ADT1-Tube
for installation in monitoring pipes from 2"

ADT1-Box
for simple wall installation

NB-IoT LTE-M LoRa

ADT1-Tube

ø 42,4 × 165 mm

ADT1-Box

162 × 82 × 55 mm

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ADT1 – Specifications

Remote transmission

Connectivity	Available Modules: LoRa: country-specific configurable M1&NB: LTE-M / NB-IoT	LoRa: LoRaWan LTE-M: LTE CAT M1 NB-IoT: LTE Cat NB2
Frequency bands	**LoRa:** EU 868 MHz / US 915 MHz / AU 915 MHz / AS 923 MHz / KR 920 MHz / IN 865 MHz **M1&NB:** LTE-M / NB-IoT B1 (2100 MHz), B2 (1900 MHz), B3 (1800 MHz), B4 (AWS 1700 MHz), B5 (850 MHz), B8 (900 MHz), B12 (700 MHz), B13 (700 MHz), B18 (800 MHz), B19 (800 MHz), B20 (800 MHz), B25 (1900 MHz) , B26 (850 MHz), B27 (FD 850 MHz), B28 (700 MHz), B66 (AWS 1700/2100 MHz), B71 (600 MHz), B85 (700 MHz)	
Transmission types	LoRa:	LoRaWAN
	M1&NB:	SMS, E-Mail (POP, SMTP), FTP (aktiv, passiv)
Encryption protocol	LoRa:	AES-128
	M1&NB:	TLS
Shortest transmission interval	LoRa:	5 minutes
	M1&NB	1 minute
Data store	28'000 measured values (2 megabits)	Incl. time stamp

Electrical data

Energy supply	3 × 1,5 V type AA batteries	Recommended and included in the scope of delivery: Energizer Ultimate Lithium battery 3000 mAh
Battery life	ADT1-LoRa: Up to 5 years with 1 measurement or transmission per hour	External influences, reception quality and the choice of batteries can lower the battery life
	ADT1-M1&NB: Up to 5 years with 1 transmission per day	
Configuration interface	USB	Internal
Configuration plug	Micro USB	
Antenna socket	SMA connector	Female

Sensor interfaces

Digital interfaces	RS485	With KELLER bus protocol
	I^2C	With KELLER D-line protocol
Shortest measuring interval	ADT1-LoRa: ca. 5 min. ADT1-M1&NB: ca. 1 min.	
Supply for sensors	3,5 V	Max. 22 mA continuous current
Maximum cable length sensors	100 m	
Compatibility	Various pressure transmitters and level probes with RS485 interface from KELLER See list of «Range of suitable level probes and pressure transmitters» on page 5	

ADT1 – Specifications

Radio Equipment Directive (RED)

LoRa CE-conformity as per 2014/53/EU	EN 301489-1 / EN 301489-3 / EN 300220-1 / EN 300220-2
M1&NB CE-conformity as per 2014/53/EU	EN 301489-1 / EN 301489-19 / EN 301489-52 / EN 301908-1 / EN 301908-13 / EN 303413

Internal measured values

Barometer	Measuring range	0,3…1,1 bar abs.
	Resolution	0,016 mbar
	Accuracy (-20…50 °C)	± 1 mbar
	Long-term stability	1 mbar / year
Temperature sensor	Accuracy (-20…50 °C)	± 2 °C
Moisture sensor	Accuracy (20…80 % RH)	± 3 %
Real-time clock (RTC)	Accuracy (-20…85 °C)	± 3 ppm (± 0,26 s/day)

Temperature range

Operating temperature	-20…50 °C
Note	The operating temperature range and the battery life are heavily dependent on the type of battery.

ADT1 Tube – Specifications

Mechanical data

Connection options

Cable gland	For cable diameters within the range of 3,5…6,4 mm
	Seal FKM

Housing

Dimensions	ø 42,4 × 165 mm (without antenna)
Material	Stainless steel 316L (DIN 1.4435)
Seal	Nitrile

Further details

(Degree of) protection	IP65
	IP68 optional: Max. immersion depth 2 m, max. immersion time 24 h IP68 can only be guaranteed when installed professionally. Transmission does not work under water.
Weight	approx. 700 g including batteries

Order information

Scope of delivery	Item
ADT1-Tube, LoRa, stub antenna, batteries	ADT1-Tube-LR PN 320060.0004
ADT1-Tube, LTE-M/NB-IoT, stub antenna, batteries	ADT1-Tube-M1&NB PN 320060.0007

ADT1 Box – Specifications

Mechanical data

Connection options

Cable gland	For cable diameters within the range of 3,5…6,4 mm
	Seal FKM

Housing

Dimensions	162 x 82 x 55 mm (without antenna)
Material	Polycarbonate (PC V-2, IK08)
Seal	EPDM

Further details

(Degree of) protection	IP65
	IP67 optional: Able to withstand short periods of immersion IP67 can only be guaranteed when installed professionally. Transmission does not work under water.
Weight	approx. 350 g including batteries

Order information

Scope of delivery	Item
ADT1-Box, LoRa, stub antenna, batteries	ADT1-Box-LR PN 320060.0001
ADT1-Box, LTE-M/NB-IoT, stub antenna, batteries	ADT1-Box-M1&NB PN 320060.0008

ADT1 – Accessories and components

Accessories

Monitoring pipe cap lock (2…6")	Monitoring pipe adapter ring (3…6")	Micro USB cable
		

Spare batteries are commercially available. Energizer Ultimate Lithium type AA, 1,5V, 3000mAh are recommended.
Additional accessories with product numbers can be found in the ADT1 operating instructions (see www.keller-druck.com).

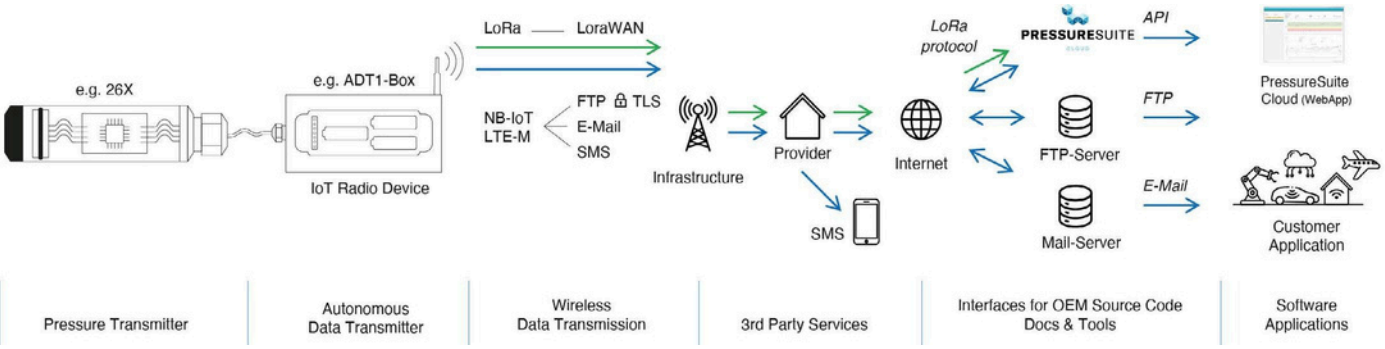
Range of suitable level probes and pressure transmitters

Level probes – Series 26X		
High accuracy	• Pressure ranges: 1...250mH2O • Accuracy 0,1 %FS • RS485 interface • Maximum cable length 100 m	
Level probes – Series 36XW		
Maximum accuracy and resolution	• Pressure ranges for 3, 10, 30, 100, 300 mH2O • Accuracy 0,05 %FS • RS485 interface • Maximum cable length 100 m	
Multi-parameter probes – Series 36XiW-CTD		
With conductivity sensor and maximum temperature accuracy	• Pressure ranges for 3, 10, 30, 100 mH2O • Accuracy 0,05 %FS • RS485 interface • Conductivity measuring ranges 0 µS/cm…200 mS/cm • Temperature accuracy 0,1 °C • Maximum cable length 100 m	
Level probes with plastic membrane – Series 36XKy		
With Kynar membrane for brackish water and wastewater	• Pressure ranges for 10, 30, 100 mH2O • Accuracy 0,3 %FS • RS485 interface • Maximum cable length 100 m	
Capacitive level probes – Series 46X		
With ceramic measuring cell for low pressure ranges	• Pressure ranges for 0,3, 1, 3 mH2O • Accuracy 0,1 %FS • RS485 interface • Maximum cable length 100 m	
Pressure transmitters – Series 23X / 33X / 35X		
With thread connection for pressure-retaining systems	• Pressure ranges for 0,3…1000 bar • Accuracy 0,05 %FS / 0,1 %FS • RS485 interface • Maximum cable length 100 m	
D-line level probes and pressure transmitters – e.g. Series 26D		
Economical and compact	• Pressure ranges for 0,3…1000 bar • Accuracy 0,15 %FS • I2C interface (maximum cable lenght 5 m)	

Notes:
- Level probes and pressure transmitters are not included in the ADT1 scope of delivery.
- X-line level probes and pressure transmitters (with RS485) are only compatible with the ADT1 in the low voltage version.
- A range of cables is available for application in water, drinking water and fuels.

ADT1 – Software

Usewhatyouneed–nomore,no less!



KELLER offers a comprehensive solution, from pressure measurement to graphical display on an end device. The ADT1 remote transmission unit sits at the start of the data chain and establishes the connection from the pressure transmitter to a receiver station that forwards the data. For existing transmission units, KELLER can supply a suitable level probe or subassemblies such as OEM pressure transmitters and pressure transducers. On the software side, the modular concept allows for access to measured values at various points on the data chain. The protocols are documented and offer various options for connecting to the customer's own software solution. In addition, DLLs and example source codes are available.

PressureSuite Cloud

The PressureSuite Cloud from KELLER offers simple and convenient access to your measurement data with your own personal login and SSL encryption. The data is readily available without the need to set up and maintain a database, FTP or mail server. Measurement data can be easily displayed in graphic form and the export function allows you to download your data as Excel or CSV files.

Measuring points are effortlessly and efficiently monitored with the integrated alarm system. For instance, a warning can be triggered via e-mail if there is an increase in the water level or a battery is running low.

The PressureSuite Cloud API allows customer-specific software to call up measured values in a standardised JSON format via HTTPS.

The guest login gives you an insight into the PressureSuite Cloud: www.pressuresuite.com