

## GSM DATA LOGGERS

### DLT-20, DLT-21



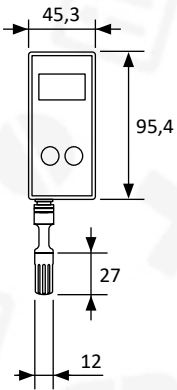
**Wireless GSM humidity and temperature loggers** use a built-in GSM modem to transmit data to a cloud server. The logger works according to the principle: woke up, measured, transmitted, fell asleep. In the absence of a mobile connection, the logger stores the received data of humidity and temperature in its own non-volatile flash memory.

For indication, a high-contrast OLED screen is used, which displays humidity and temperature values on all measurement channels. In addition, the signal level, battery charge and serial number are displayed on the screen. The logger comes with a rubber boot for shock and drop protection and has a built-in magnetic mount. The logger has two IP67 M8 connectors which one or two external Pt1000 thermotransducers or an SHT air humidity and temperature transducer can be connected to. The logger has a USB-C connector to connect a battery charger. The removable 18650 lithium battery of the logger can be quickly replaced as needed by the user.

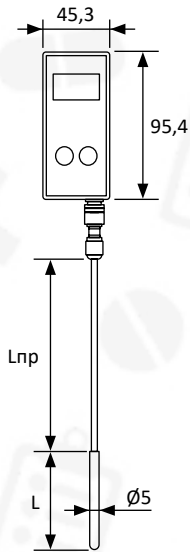
TECHNICAL SPECIFICATIONS					
Model Name	DLT-20	DLT-21	DLT-20-Pt	DLT-20-2Pt	DLT-21-Pt
<b>Logger</b>					
Number of measurement channels	1	2	1	2	3
Available configurations of measurement channels <sup>1</sup>	Temperature	Temperature + Humidity	Temperature	2 x Temperature	2 x Temperature + Humidity
Output signal	GSM				
Indication	OLED 1.3" 128 x 64 pixels of resolution				
Powering	From battery / from the USB Type C adapter together with the battery				
Battery type	1 lithium battery (3,6 V 3200 mA 18650, NCR18650B (0...60°C) / NL1835LTHP (-30...50°C))				
Battery lifetime	5 years				
Operating time using the battery	Up to 7 days				
Response time	From 1 to 60 minutes (mains powering), from 5 to 60 minutes (battery powering)				
Magnetic mount	Vertical				
Operating temperature, °C	0...60 (standard), -30...60 (low-temperature)				
<b>Internal temperature sensor</b>					
Sensor Curve	TMP116	SHT31	Pt1000	Pt1000 / SHT31	
Operating Temperature Range, °C	-30...60	-30...60	-196...100, -50...100, -50...250, -50...500	-196...100, -50...100, -50...250, -50...500 / -30...120	
Temperature accuracy, °C	0,5	0,4	± (0,4 + 0,002 x  T )*	± (0,4 + 0,002 x  T ) * / 0,4	
Humidity accuracy (at temperature 0...60 °C), %	N/A	≥ 4% (0...10% and 90...100%), 3% (10...90%)	N/A	≥ 4% (0...10% and 90...100%), 3% (10...90%)	
Connector	M8	M8	M8	2 x M8	2 x M8
Response time, sec	240 - air, V=0 m/sec		240 - air, V=0 m/sec, 15 (Ø6 mm) - water, V=0,2 m/sec		240 - air, V=0 m/sec, 15 (Ø6 mm) - water, V=0,2 m/sec
Sheath material	N/A		Steel 321		
Immersion length, L, mm	N/A		60, 100, 160, 250		
Sheath diameter, mm	N/A		Ø6		

<sup>1</sup> - T - operating temperature range

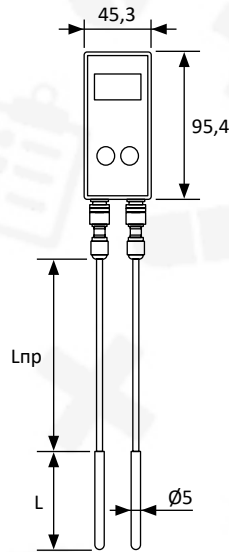
**DLT-20, DLT-21**



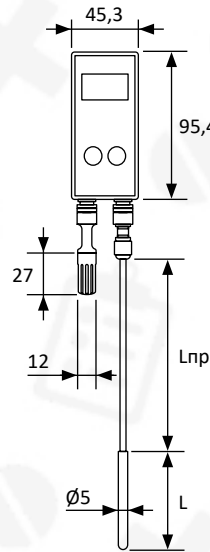
**DLT-20-Pt**



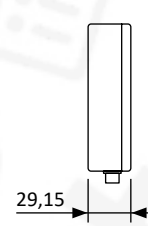
**DLT-20-2Pt**



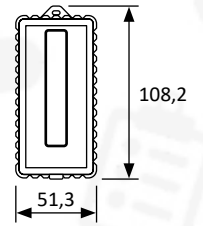
**DLT-21-Pt**



**Side view**



**Protective case**



### Order Info for DLT-20, DLT-21

Example:

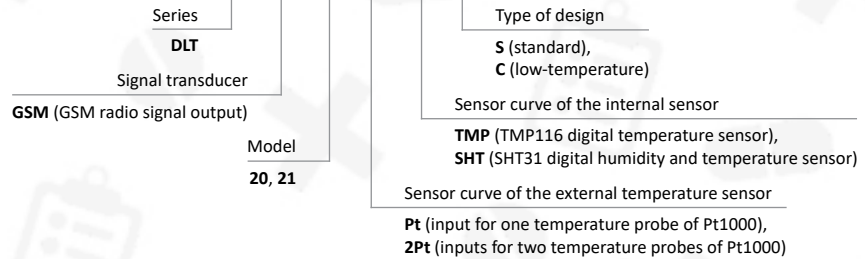
DLT - GSM - 20 - TMP - S

Example:

DLT - GSM - 20 - 2Pt - TMP - S

Example:

DLT - GSM - 21 - Pt - SHT - C



### Order Info for external temperature probe of DLT-20, DLT-21

Example: TSP - 1-6 - Pt1000 - A - 2 - 60 - 5 - 8000 - RE - M8 - /-100...100/

### FEATURES



18650 Battery



Protective case

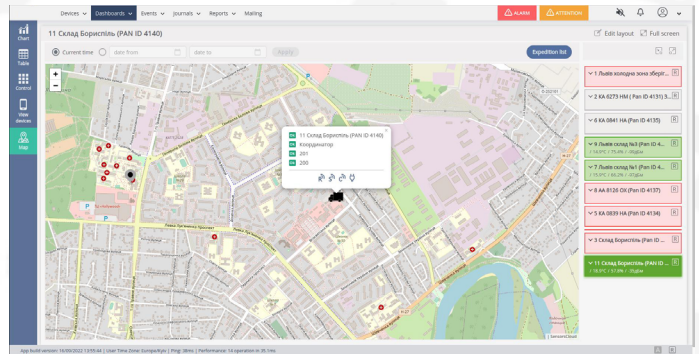


External temperature probe with a connector

## SOFTWARE COLD CHAIN CLOUD

The Cold Chain Cloud is a cloud SCADA system, which solves two main tasks:

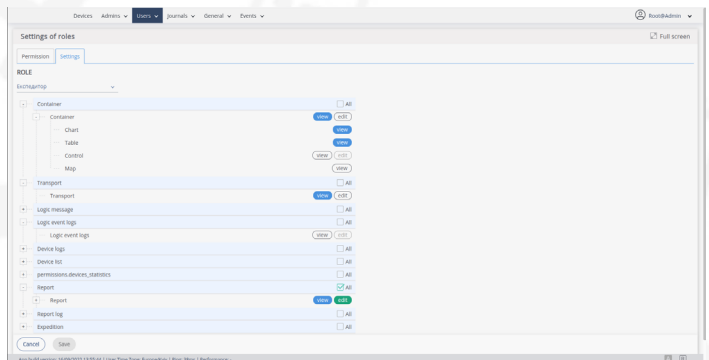
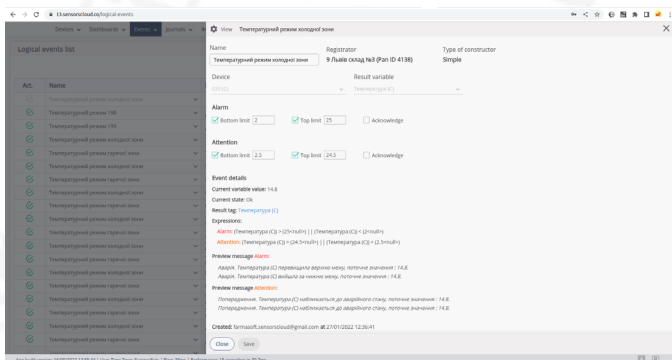
1. The first one is monitoring and storage in one place all of data received from plenty of measuring devices (loggers, probes, registrators, etc.). Measuring devices can interact with Cold Chain Cloud by various protocols of data transfer and be in different geographical spots;
2. The second one is providing with authorized access for a user to measuring data using web-interface and to display this data in convenient appearance. The Cold Chain Cloud is a platform-independent system. A user interacts with Cold Chain Cloud using a web-browser. Wherein the user doesn't need to install any additional software on own PC.



The advantage of The Cold Chain Cloud is that the program is based on a client-server architecture. This kind of architecture allows to bring a part of data processing loading from a server onto client's gadget or PC, and that increases productivity and reliability of the system.

On one side, the server part provides with interaction via server API to measuring devices (loggers, probes, registrators, etc.). On another side, the server part interacts via client API to the client part providing with data depending on a user request. Therefore, basic functions of the server part are collecting, primary processing, storage, backing up data and providing with data to the client part.

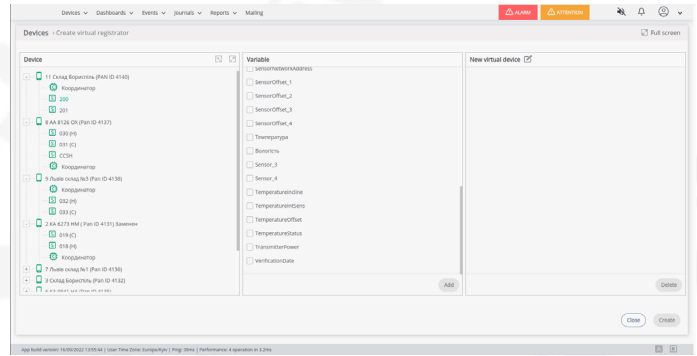
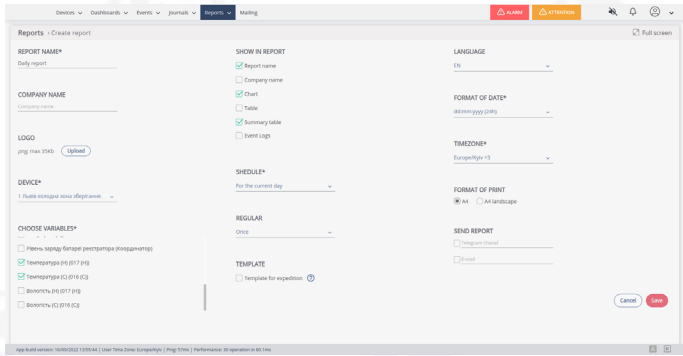
The server part is a software, that's coded in JavaScript (Node.js) and C++ programming languages. The server part works in OS Linux operation and hosts on a server in a data-centre. The client part is JavaScript (AngularJS) application, that automatically downloads in user's web-browser and works until the user closes the tab. Client's application provides with interfaces to interact to data in real-time, such as: displaying archive data of all devices by graphical appearance, reviewing graphs, archives, logical events, alarms, various widgets, system settings and so on.



The Cold Chain Cloud provides a user with a flexible system to manage user rights, that is preconfigured by a system administrator. It allows to divide users to different groups with different authorities and roles: administrators, operators, users, etc. Depending on rights, the user can change or view only available data and devices.

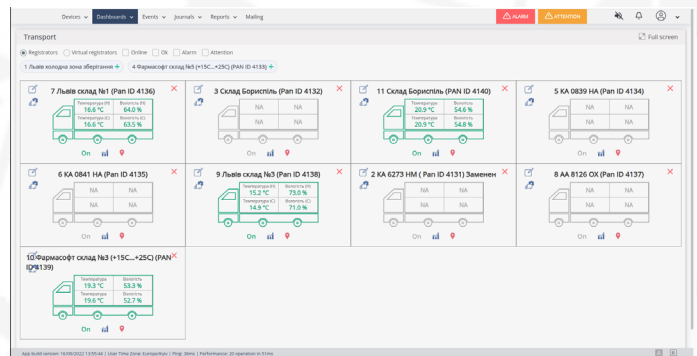
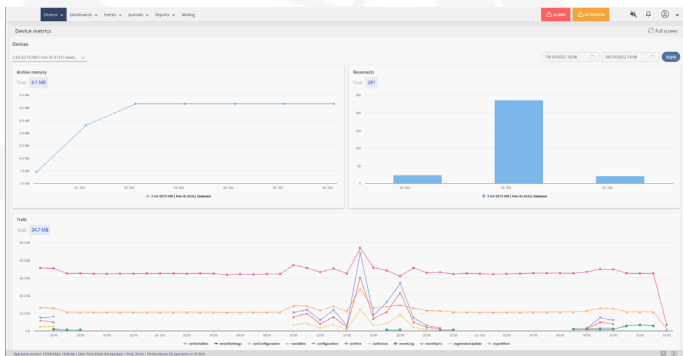
Online data received from various devices can be combined in a group by general characteristics. It is possible to generate graphs, reports, tables by groups, and to define the limits of alarm activation.





The Cold Chain Cloud system allows a user to monitor and to manage devices remotely in real-time, to display data archives, to generate graphs, tables, reports for certain time period, to export data in a PDF file. In graphs a user can change scale by X and Y axes, choose a color, line type, etc. On a detailed graph a user can display either one parameter or a bunch of parameters. Above the main part of detailed graph construction there is a widget called The Temporary Ruler with preview of graph trends. This widget allows a user quickly and intuitively to choose necessary time period to generate a detailed graph.

The flexible system of alarm settings is implemented in The Cold Chain Cloud. A user can set the limits of alarm activation, and set users, who receive emergency messages via Telegram or other Internet-messengers, or via email. Depending on having connection to devices, all the data, being in usual, pre-alarm or alarm status, change value color and group color online. Besides, an operator, who is connected online, sees a blinking alarm icon on top part of a screen, which stops to blink only after confirmation (acknowledgement) by an operator this alarm.



The Cold Chain Cloud allows to keep a technological journal, a user action journal and a system journal. All of alarms and errors in technological equipment are kept in the technological journal. All of user reactions on alarms also are kept who and when confirmed it (acknowledged). Changes of settings and configurations of The Cold Chain Cloud, projects, groups and data, that were made by a user in certain time, are kept in the user action journal.

The Cold Chain Cloud has a possibility to generate mnemonic schemes of technological processes as a widget with active elements. The widget allows to visualize a process of monitoring and management in real-time. Widgets are the option, which create for an order for certain technological process and agree with a customer corresponding a technological requirements.

Type	Name	Owner	Connect	Signal	Battery	Status	Last act	Actions
OK	1 Лямбда холод №1 (Pan ID 4130)	Me	online	-102 dBm	100%	OK	2019/02/22 11:26:25	
OK	Колодецький	Me	offline	-	-	OK	2019/02/22 11:26:25	
OK	022 016	Me	online	-84 dBm	100%	OK	2019/02/22 11:26:25	
OK	033 (C)	Me	online	-77 dBm	100%	OK	2019/02/22 11:26:25	
OK	1 Лямбда холод зона об'єкту	Me	offline	NA	NA	Alert	19/10/2022 10:52:04	
OK	Колодецький	Me	offline	NA	NA	Alert	19/10/2022 10:52:04	
OK	019 (C)	Me	offline	NA	NA	Alert	19/10/2022 10:54:58	
OK	017 (C)	Me	offline	NA	NA	Alert	19/10/2022 10:54:58	
OK	2 КА 6273 HA (Pan ID 4131) Заменен	Me	offline	NA	NA	OK	21/10/2022 14:04:47	
OK	019 (C)	Me	offline	NA	NA	OK	21/10/2022 14:04:47	
OK	019 (C)	Me	offline	NA	NA	OK	21/10/2022 14:04:47	
OK	11 Склад Борщівське (Pan ID 4140)	Me	online	-45 dBm	83%	OK	2019/02/22 11:26:29	
OK	200	Me	online	-29 dBm	100%	OK	2019/02/22 11:26:29	
OK	201	Me	online	-25 dBm	100%	OK	2019/02/22 11:26:29	
OK	Колодецький	Me	online	-	-	OK	2019/02/22 11:26:29	
OK	3 Склад Борщівське (Pan ID 4132)	Me	offline	NA	NA	Alert	07/09/2022 12:51:20	
OK	Колодецький	Me	offline	NA	NA	Alert	07/09/2022 12:51:20	
OK	020 (C)	Me	offline	NA	NA	OK	07/09/2022 12:51:20	
OK	021 (C)	Me	offline	NA	NA	OK	07/09/2022 12:51:20	

Appared from	Appared to	Message	Expression	Type	Acknowledge
19/10/2022 04:04:04	19/10/2022 04:16:09	Попередження. 1 Лямбда холод зона об'єкту -019 (C)-Температура (C) нижче ніж до alert	Температура (C) < 2.5-Alert	Alert	
19/10/2022 01:10:00	19/10/2022 02:34:30	Преп'яга 11 Склад Борщівське (Pan ID 4140) не на зв'язу	Alert	Alert	
19/10/2022 00:00:04	19/10/2022 00:10:04	Попередження. 1 Лямбда холод зона об'єкту -017 (C)-Температура (C) нижче ніж до alert	Температура (C) < 2.5-Alert	Alert	
19/10/2022 20:04:04	19/10/2022 20:14:04	Попередження. 1 Лямбда холод зона об'єкту -016 (C)-Температура (C) нижче ніж до alert	Температура (C) < 2.5-Alert	Alert	
19/10/2022 16:04:04	19/10/2022 16:14:04	Попередження. 1 Лямбда холод зона об'єкту -015 (C)-Температура (C) нижче ніж до alert	Температура (C) < 2.5-Alert	Alert	
19/10/2022 16:04:05	19/10/2022 16:30:04	Попередження. 1 Лямбда холод зона об'єкту -017 (C)-Температура (C) нижче ніж до alert	Температура (C) < 2.5-Alert	Alert	
19/10/2022 14:04:22	19/10/2022 11:50:29	Преп'яга 9 Лямбда холод №3 (Pan ID 4138)-022 (C) не на зв'язу	Alert	Alert	
19/10/2022 12:06:22	19/10/2022 13:12:22	Преп'яга 8 Лямбда холод №3 (Pan ID 4138)-022 (C) не на зв'язу	Alert	Alert	
19/10/2022 11:46:23	19/10/2022 11:52:23	Преп'яга 9 Лямбда холод №3 (Pan ID 4138)-022 (C) не на зв'язу	Alert	Alert	