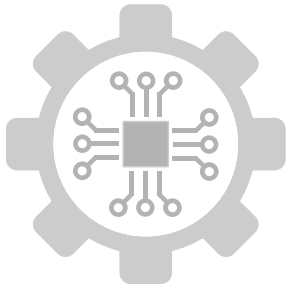
DIFFERENTIAL PRESSURE TRANSMITTER

BT-3X1/3X2
USER MANUAL

www.emskontrol.com



P. Code	Output Signal
BT-301/302	0-10 V / 2-10 V / 0-3 V
BT-341/342	4-20 mA / 0-20 mA
BT-361/362	Modbus RTU

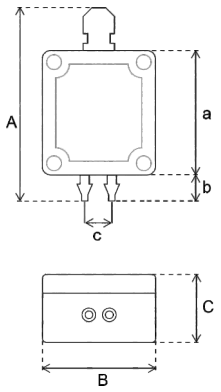
WHAT IS IT?
Precisely measures the differential pressure between two points and provides an analog output.

HOW DOES IT WORK?
It can operate with a supply between 12 V DC and 24 V DC. Measurement values are taken from the analog output terminals and transferred to the desired location.

GENERAL FEATURES
Accurate and Precise Measuring, Analog Output, Durable and Handy Design, Long Operating Life, Easy Assembling, IP 67 Enclosure (Excluding Sensor)

AREAS OF USE
HVAC Applications, Poultry Automation and Poultry Farms, Cold Storage, Incubation Rooms, Food Storage, Air Conditioning Cabinets, Clean Rooms and Laboratories.

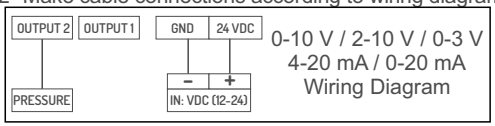
SAFETY PRECAUTIONS
1- Always read the user manual before using the device and its apparatus.
2- Damages caused by opening, breaking or misuse of the plastic parts of the device and its apparatus are considered out of warranty.
3- Keep the device and its apparatus away from external influences such as liquid, high dust, high temperature, etc. and protect them.
4- Do not expose the device cables to crushing, pinching, or excessive pressure.
5- Disconnect the electrical power when your device is not used for a long time.
6- Our devices and apparatus should be used by paying attention to the points in the user manual. In case of damages and malfunctions arising from external use (liquid contact, dropping the device, etc.) ask for help from the service.
7- Failures due to electrical connection errors and electrical voltage or current errors are not covered by the warranty



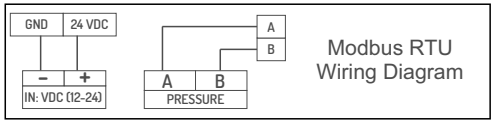
Sizes	
A	96 mm
B	58 mm
C	35 mm
a	64 mm
b	10 mm
c	12 mm

Technical Data	
Product Name:	Differential Pressure Transmitter
Supply Voltage:	12-24 V DC
Output:	0-10 V / 2-10 V / 0-3 V 4-20 mA / 0-20 mA Modbus RTU
Output Range:	0 - 50 Pa / 0-100 Pa -125...+125 Pa
Output Range:	0 - 250 Pa / 0-500 Pa -500...+500 Pa
Sensitivity:	± 1 Pa
Accuracy:	± % 3
Operating Temperature:	-10°C...+55°C
Storage Temperature:	-20°C...+60°C
Protection Class:	IP 67 Enclosure

INSTALLATION
1- Unpack the product and remove the top cover.
2- Make cable connections according to wiring diagram.



0-10 V / 2-10 V / 0-3 V
4-20 mA / 0-20 mA
Wiring Diagram



Modbus RTU
Wiring Diagram

3- If the product will be mounted on the wall, you can use the screws and dowels in the package.
4- The device starts measuring approximately 30 seconds after power is applied. It is recommended that the product remains in the environment for at least 5 minutes to obtain accurate measurement values.
5- It is recommended to use shielded cable as communication cable as it will prevent communication signals from being affected by external influences.
6- Because cable resistance may affect the measurements, check the measurement values again after installation.

MODBUS RTU COMMUNICATION STRUCTURE
RS485 Baud rate value in Modbus communication is 9600 by default. Stop bit:1, Parity: NONE.
Default Slave ID is 86.
Differential pressure value is kept in the holding register at address 2 (40003). Differential pressure information can be obtained by reading these registers.
Register map and default values table:

Register	Address	Default Value	Read Write	Min. Value	Max. Value
Slave ID	0 (40001)	86	R/W	1	247
Baud rate	1 (40002)	3	R/W	0	8
Pressure	2 (40003)	-	R	-	-
Velocity Stage	3 (40004)	2	R/W	1	5

Slave ID and Baud rate can be changed via Modbus communication. For this, the desired Slave ID is written to the register with address 0 (40001), which is the register where the Slave ID is located. Likewise, if the Baud rate is to be changed, the Baud rate can be changed by writing the value for the desired Baud rate according to the table below in the register with address 1 (40002). If the velocity stage needs to be changed by writing the desired value to the address 3 (40004) register according to the table below.

Value	Baud Rate
0	1200
1	2400
2	4800
3	9600
4	14400
5	19200
6	38400
7	57600
8	115200

Value	Velocity Stage
1	Very Fast
2	Fast
3	Normal
4	Slow
5	Very Slow

Press and hold the “Calibration” button to reset the changes made to the Slave ID, baud rate and velocity stage to the default values. Wait until the Status (green) LED turns off (approx. 30 seconds). After the LED turns off, the button is released. Thus, Slave ID, baud rate and velocity stage are returned to their default values.

LED Meanings		
Power (Red)	**On**	Normal Operating
	Off	No Energy (Error)
Status (Green)	**On**	Measurement Preperation
	On	Normal Measurement
	Off	Error - Fault

BEFORE CALIBRATION
1- The product is supplied pre-calibrated. Please do not perform calibration unless necessary.
2- Perform calibration only if it has been confirmed that the product is measuring incorrectly.
3- Calibration is not supported for Modbus output models.
4- To verify whether the device is measuring correctly, disconnect the hoses from the + and - ports. Ensure that there is no air flow during the procedure. If the measured value is not 0 Pa, calibration can be performed.

CALIBRATION
1. To perform differential pressure calibration, press the "Calibration" button on the product. The Status (green) LED will start flashing. When the LED remains steadily lit (after approximately 10 seconds), release the button to start the calibration process.
The Status LED will then flash rapidly. When it stops flashing, the calibration process is complete.
2. To verify the calibration, test the device again in an environment without airflow.

www.emskontrol.com

USER MANUAL

DECLARATION OF CONFORMITY

Headquarters and place of production, Mersinli Mah. 1201/2 Sk. Temsil Plaza No:2/F Konak / İZMİR - TÜRKİYE, EMS KONTROL ELEKTRONİK VE MAKİNE SAN. TİC. A.Ş. declares that the product marked with CE, whose name and specifications are given below, covers the specified directives and provisions.

Brand: Ems Kontrol
Product Name:BT-3X1/3X2
Product Type: Differential Pressure Transmitter

Compatible Directives:

Electromagnetic Compatibility Directive 2014/30/EU (EMC EN 61000-6-3: 2007 + A1: 2011, EN 61000-6-1: 2007)

Low Voltage Directive 2014/35/EU (LVD EN 60730-2-9:2010, EN 60730-1:2011)

Additional information: This product can be used in combination with other devices and compliance with the directives covers only the product. Ems Kontrol is not responsible for the compliance of the entire system with these directives.

This declaration is not valid if the product is modified without our approval.

CE RED

EMS KONTROL ELEKTRONİK VE MAKİNE SAN. TİC. A.Ş.
Mersinli Mahallesi 1201/2 Sk. Temsil Plaza No:2/F Konak / İ Z M İ R
EGE V.D. 334 104 4628
Mersis No: 0334104452800001

WARRANTY TERMS

1- The warranty period of the device and accessories starts from the invoice date and is guaranteed for 2 years against manufacturing defects.

2- Device and accessories are delivered to the customer in working condition in our company. On-site commissioning is subject to service fee.

3- The repair of the device and accessories under warranty is carried out in our company as a result of sending them with the transportation company contracted by our company. In on-site services, transportation and accommodation expenses of the service personnel shall be borne by the customer. The cost of the working time spent on the road is added to the service fee and the collection is made in advance.

4- Maintenance of device and accessories is done in our company. Shipping and transportation costs of the device and accessories to and from our company for maintenance shall be borne by the customer

5- In case of malfunction of the device and accessories whose warranty period continues, whether the malfunction is caused by the fault of the customer or the manufacturer is tested in our company and reported with the report to be issued by our company.

6- In case of detection of manufacturer-induced faults of the device and accessories whose warranty period continues, the customer may request a replacement or may request that the repair costs of the device and accessories be fully covered by the manufacturer, provided that it does not exceed the product price.

7- In the event that the faults of the device and accessories whose warranty period continues are determined to be caused by the customer, all costs shall be borne by the customer.

8- If the customer does not indicate that he/she is aware of the defects in the device and accessories from the date the warranty period starts or in cases where he/she is expected to be aware, he/she cannot benefit from Article 6.

9- Failures arising from the use of device and accessories contrary to the points in the user manual are not covered by the warranty.

10- Device and accessories are not covered by the warranty if they are dropped, broken or scratched by the customer.

11- Damages caused by the use of device and accessories of other brands and models without the approval of the manufacturer are not covered by the warranty.

12- Errors caused by rusting, oxidation and liquid contact due to working in dusty / acidic / humid environments are not covered by the warranty.

13- Damages that may occur during transportation of device and accessories are not covered by the warranty. If the customer wishes, he/she can have transportation insurance.

14- Damages caused by mains voltage / faulty electrical installation are not covered by the warranty.

15- Device and accessories are not covered by the warranty in case of malfunctions caused by force majeure such as fire, flood, earthquake, etc.

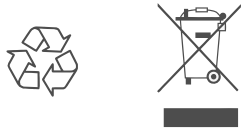
16- All parts of the device and accessories, including all parts, are covered by our company's warranty.

17-If the device and accessories malfunction within the warranty period, the time spent in repair shall be added to the warranty period. The repair period of the goods shall not exceed 20 working days. This period starts from the date of notification of the malfunction of the goods to the service station, in the absence of a service station, to the seller, dealer, dealer, agent, representative, importer or manufacturer - manufacturer of the goods. It is possible for the consumer to notify the malfunction by telephone, fax, e-mail, registered letter with return receipt or similar means. However, in case of dispute, the burden of proof belongs to the consumer. If the malfunction of the goods is not resolved within 20 business days, the manufacturer-manufacturer or importer; until the repair of the goods is completed, another product with similar characteristics must be allocated to the use of the consumer.

18- Despite the consumer's right to repair the goods;
-Provided that it is within the warranty period from the date of delivery to the consumer, it fails at least four times within a year or six times within the warranty period determined by the manufacturer-manufacturer and / or importer, as well as the fact that these failures make the inability to benefit from the goods continuous,
-Exceeding the maximum time required for repair,
-If it is determined that it is not possible to repair the malfunction with the report to be issued by the service station of the company's service station, if the service station is not available, respectively by one of its dealer, dealer, agency, representative, importer or manufacturer-manufacturer, it may request a refund or a price reduction at the rate of defect.

19-Customer may file complaints and objections to consumer courts or consumer arbitration committees.

20-The warranty certificate must be kept by the customer during the warranty period. In case of loss of the document, a second document will not be issued. In case of loss, repair and replacement of device and accessories will be made for a fee.



This device is a Waste Electrical and Electronic Device according to the directives applied in Europe 2002/96/EC. (WEEE) Before scrapping or throwing away this device, you must prevent its potential negative consequences for the environment and human health. Otherwise it would be inappropriate waste. This symbol on the product is intended to warn that the product should not be treated as household waste and should be delivered to electrical and electronic waste collection points. Disposal of the product must be done in accordance with local environmental regulations. You can obtain detailed information from authorized units on how to destroy, reuse and recycle the product.

Manufacturer's

Title: EMS KONTROL ELEKTRONİK VE MAKİNE SAN. VE TİC. A.Ş.

Address: Mersinli Mah. 1201/2 Sokak Temsil Plaza No:2/F Konak / İzmir-TÜRKİYE
Telephone: 0 (232) 431 2121
E-Mail: info@emskontrol.com

Company Stamp:

STAMP
EMS KONTROL ELEKTRONİK VE MAKİNE SAN. TİC. A.Ş.
Mersinli Mahallesi 1201/2 Sk. Temsil Plaza No:2/F Konak / İ Z M İ R
EGE V.D. 334 104 4628
Mersis No: 0334104452800001

Product's

Type: Differential Pressure Transmitter
Brand: Ems Kontrol
Model: BT-3X1/3X2
Warranty Duration: 2 Years
Maximum Repair Time: 20 Days
Serial Number:

Vendor Company
Title: . .....
Address: .....
Telephone:..... Fax:.....
E-Mail:.....
Invoice Date and Number:.....
Delivery Date and Place:.....
Signature of Authorised Person:.....
Company Stamp:.....

STAMP

Product's
Type: Differential Pressure Transmitter
Brand: Ems Kontrol
Model: BT-3X1/3X2

Ems Kontrol reserves the right to make changes and improvements to the product specifications and user manual.

*For all changes, please visit emskontrol.com.

www.emskontrol.com