

Humidity and Temperature Transmitter

HTX500

User's Manual



Explosion-proof temperature, humidity Transmitter



Amendment List

Document number : DT-CF-149

Version	Date	List
Ver 0.1	2016.08.22	Enactment
Ver 0.2	2016.11.16	Add the Certificatio and DOC
Ver 0.3	2017.07.04	Order example error correction
Ver 0.4	2018.02.23	Change the ATEX TR Ver.
Ver 0.5	2019.09.09	Change the Galvanic Isolator model
Ver 0.6	2019.10.14	Document number
Ver.0.7	2019.10.22	Business hour delete
Ver.0.8	2021.05.28	Change the CE NB(SGS Baseega => SGS Fimko)
Ver.0.9	2024.02.21	Probe Installation Accessories change






Cautions for safety

Please read cautions for safety carefully before use the product.

Cautions for safety shall be observed because such cautions are to use the product safely and correctly in order to prevent accident or danger in advance

- When this product is used for controlling of device which may affect life or property (such as controlling of nuclear power, medical instrument, vehicle, railroad, aviation, burner, entertainment device or safety device), double safety devices must be installed before use.
- This product shall be installed on a panel or at where safety is secured before use.
- Do not connect lines or check or repair when power is applied.
- For power connection, verify the terminal number before connection.
- Do not modify product by unauthorized person other than our service technician.
- Do not use this product at outdoor. Product life time may be shortened.
- In wire connection, tighten the terminal screw with sufficient torque.
- Use this product within its rated/performance range. Product life time may be shortened.
- Channel 1 is considered not isolated from frame due to the potential presence of a conducting medium. This must be taken into account during installation.
- The build-up of dust layers on the equipment is not permitted.
- To avoid the build up of eletrostatic charge, the equipment should only be cleaned with a damp cloth and should not be mounted in dust laden high airflow areas.

Symbols for safety

	<p style="text-align: center;">WARNING</p> <p>Warning to person in hazard area Non-conforming of direction may cause serious or fatal injury.</p>
	<p style="text-align: center;">CAUTION</p> <p>Caution to person in hazard area Non-conforming of direction may cause minor or light injury.</p>
	<p style="text-align: center;">NOTICE</p> <p>Information and recommendation required for using product is provided.</p>

Information for product warrant

The original purchaser who procured product or license from Dotech will get warrant as follows:

Warrant condition

Warrant for Dotech product is 1 year and within this period support is provided to product trouble.

Even in warrant period, Dotech will not provide warrant for damaged product if:

- Product is used without following the instruction of product manual and specified digital input/output rating or product failure is caused by external anthropogenic impact or environmental fact where product is installed.

In the event of product trouble within product warrant period, please contact Dotech head office immediately.

When the original purchaser claims product trouble within warrant period, product trouble will be examined in purchaser area or such product will be returned to us for verification, and repair or replacement service will be provided. When the warrant period is expired or product trouble does not meet the warrant condition, repair/replacement and transportation shall be made at original purchaser's cost.

Unless the limitations in performing of warrant conditions stated below conflict to applicable laws, Dotech shall not be liable to – regardless of contracting, indemnification, warrant or illegal action [including mistake or no-fault liability] –any consequent damage or loss caused from special, indirect, accidental, legal and company liquidation in relation to procured product including cease of business, loss from product use or profit issue of the original purchaser against any legal requirement and assertion.

Limitation in performing of warrant conditions

Excluding customer requirements arising from non-fulfillment of above warrant conditions, Dotech shall not be liable to any claim asserted by the original purchaser, its related person, agent or contractor for the loss, damage or expenses caused or resulted from the sold product. Above warrant conditions are exclusive right of original purchaser. Dotech refuses to execute any other expressed or implied warrant conditions – including warrant condition of product modification and implied warranty condition by product seller, warranty condition without legal infringement – other than our warrant conditions.

Performing of warrant condition is not applied to the product trouble caused by user's failure in observing our instruction for product operation and maintenance, replacement, accident, misuse, abuse or carelessness.

In the system design of original purchaser, technical support provided by Dotech personnel and its agent is only a proposal, not suggestion. Original purchaser shall be responsible to make decision in accepting of such proposal, and it shall be tested by original purchaser.

Original purchaser shall be responsible to make decision of the fitness of the product and application meeting customer's purpose.

The contents described in the warrant condition will be applied actually, and any person or personnel of agent, company or other entity, Dotech or other company shall have no authorization to modify, correct or extend the warrant conditions at any reason.

Technical inquiry

business@dotech21.com

<http://www.dotech21.com>

Customer Service

Request for Customer service

1) Must-write item when you send product requested for Customer service to us – Symptoms: non-conformance items (Items to request for Customer service) We will inform you if any special items and repair charge is required by using customer address, contact, person in charge, company name. Customer information will be used in providing Customer service quickly and correctly.

2) Request for Customer service is accepted through delivery service and mail..

Address to: Dotech inc. Customer service team, 6th floor Joongangilbo building, 778 Wonsi-dong,
Danwon-ku, Ahnsan city, Kyungki-do, Korea

Freight charge for Customer service: Product purchased within one year: We pay for the freight.

(However, in case of Customer service caused by customer's carelessness,
we will ship product at freight collect condition)

Product which warrant period (1 year) is expired: Customer will pay the round trip freight.

(However, in case of product which was delivered wrongly at our freight prepaid, freight may be charged
at product shipment after repair.)

3) Please request Customer service to the company from you purchased or installation company.

4) Do not damage the label on the product intentionally. Consumer may get disadvantage by the damaged label.

5) Before the Customer service product shipment, please pack safely.

We will not be liable to any loss and damage during transportation.

6) Free of charge warrant period is 1 year from the date of procurement.


(However, any Customer service caused by customer's carelessness shall be chargeable regardless of warrant period.

Do not include V.A.T.)


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1. Overview

	<p>HTX 500 is an intrinsic safety certified product meeting the Article 34 of Industrial Safety Health law and notice #2013-54 of the Ministry of Employment and Labor (Notice for mandatory safety certification of protection device).</p> <p>16-AV2BO-0332X-0339X Ex ia IIC T4, Ex iaD 20 T200°C Korea Occupational Safety & Health Agency4</p>
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Temperature and humidity transmitter HTX500 series is a device for measuring relative humidity and temperature in hazard area, and 2-wire loop current output is provided.

 <p>EX WARNING</p>	WARNING
<p>CH1 and CH2 shall be galvanic isolated electrically from each other in operation. For the installation in hazard area, transmitter shall be connected through galvanic isolator or zener barrier always.</p>	

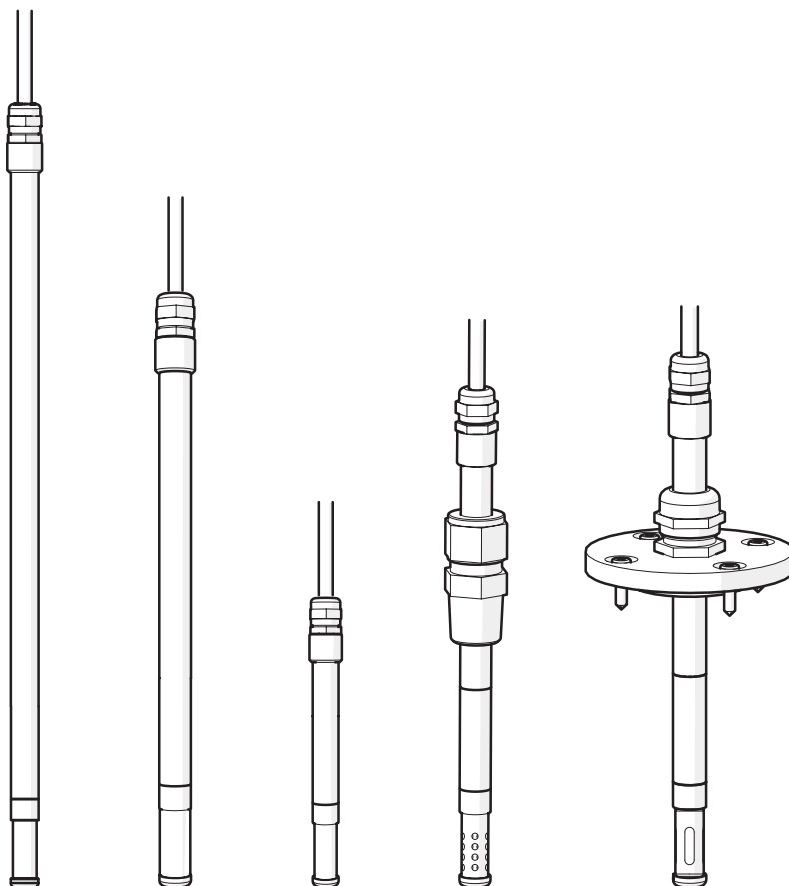


HTX series provides not only relative humidity and temperature but about 10 measurement parameters such as dew point temperature and absolute humidity.

Output type


Character	Quantities	Suffix	Unit(metric)
0	Relative humidity	RH	%RH
1	Temperature	T	°C
2	Dew point temperature	Td	°C
3	Absolute humidity	A	g/m ³
4	Specific gravity of water	x	g/kg
5	Wet-bulb temperature	Tw	°C
6	Water vapor partial pressure	Pw	hPa
7	Enthalpy	h	kJ/kg
8	Water activity	aw	-
9	Oil and water content	ppmw	ppm

Probe and filter



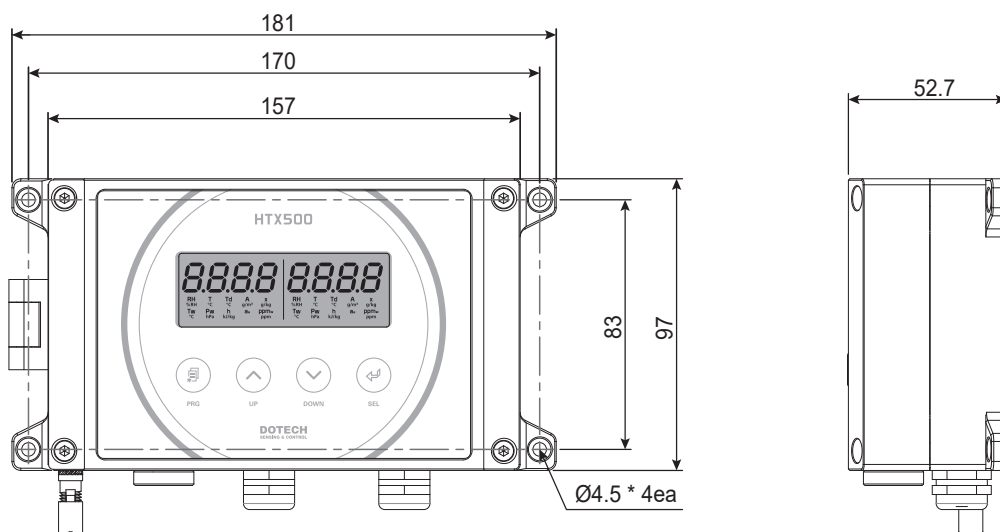
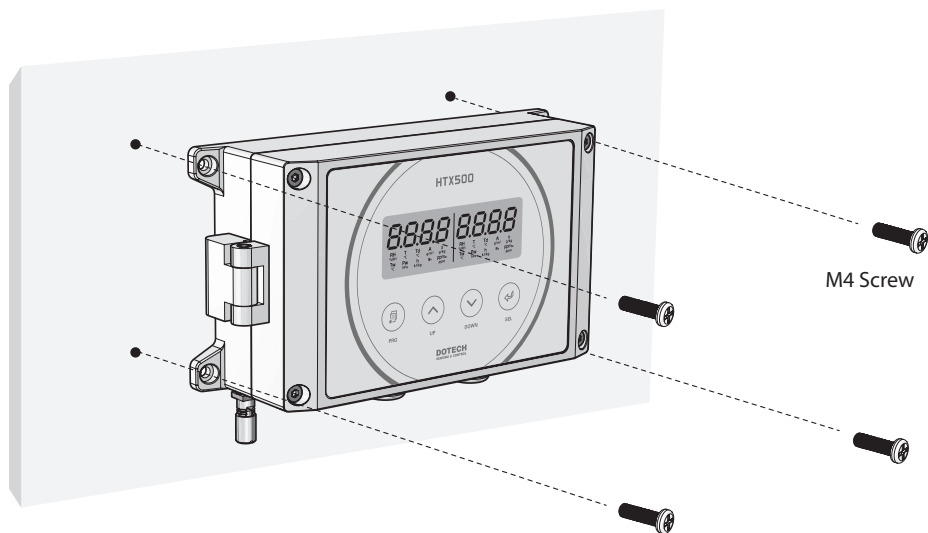
2. Installation

2.1 Installing transmitter housing

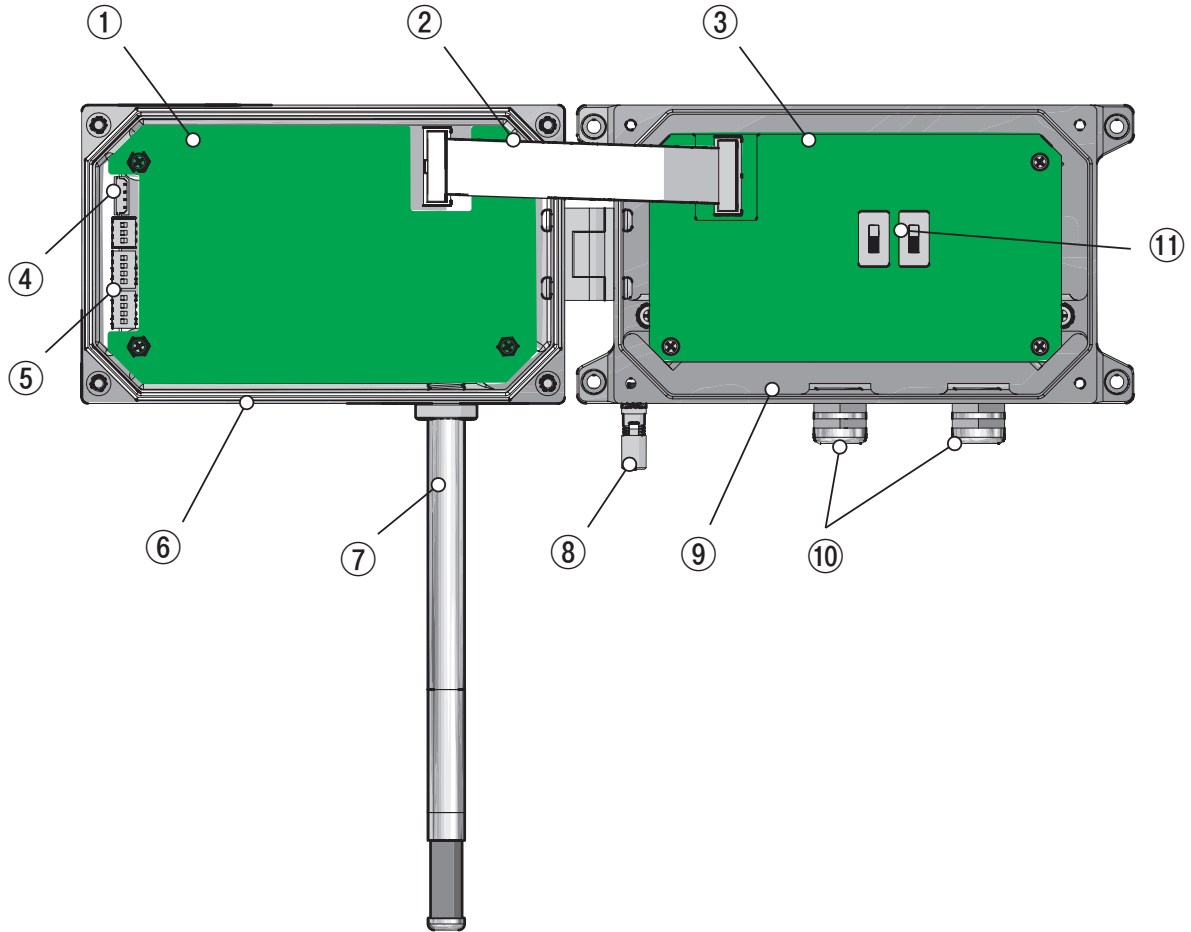
 <p>EX CAUTION</p>	CAUTION
<p>Transmitter shall be installed the safe place where no direct light or no rain reaches.</p>	

Fix the transmitter on panel or wall by using 4 screws as shown in below figure.

Recommended screw : M4 (<4.5mm(0.18") diameter)






2.2 Component names of transmitter

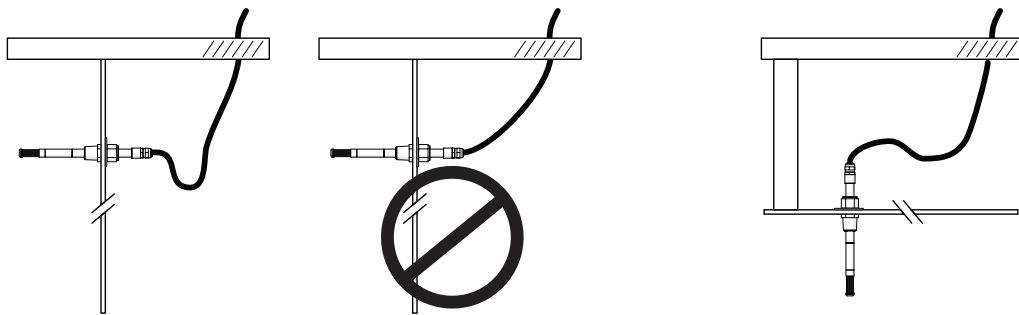


NO	Name
①	Protection cover of main board
②	Flat cable
③	Protection cover of power board
④	Serial communication port
⑤	DIP switch
⑥	Front cover
⑦	Sensing probe
⑧	Grounding terminal
⑨	Base cover
⑩	Cable gland
⑪	ON/OFF Power switch

2.3 Installing sensor probe

 <p>EX WARNING</p>	<p style="text-align: center;">WARNING</p> <p>For installing probe in Gas group IIC, make sure that no failure is made by impact on housing surface or spark by rubbing.</p>
 <p>EX CAUTION</p>	<p style="text-align: center;">CAUTION</p> <p>In installing probe, if the mechanical stability or seal is not adequate by affection from surrounding circumstance (vibration, thermal impact), additional device shall be used to secure stability.</p>
 <p>NOTICE</p>	<p style="text-align: center;">NOTICE</p> <p>Do not cut probe cable or extend long. Such unauthorized change cause to change the humidity compensation value of transmitter. When probe is installed horizontally or vertically, lay the cable loosely to prevent permeation of condensate to sensor.</p>


If process temperature is higher than ambient temperature, install entire probe and a part of cable inside of process.

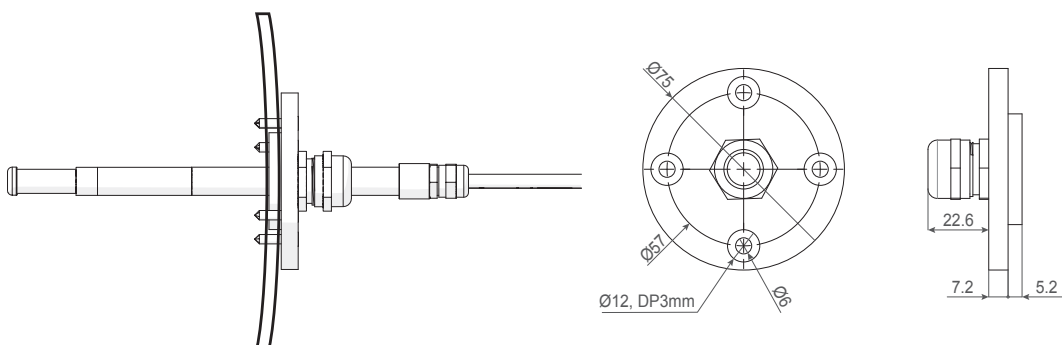


Horizontal Mounting of Probe


Vertical Mounting of Probe


2.4.1 Installing duct flange (optional)

 <p>EX WARNING</p>	<p style="text-align: center;">WARNING</p> <p>Duct flange can be used as for probe mount or bushing in hazard area of same category, but it cannot be used as for Zone bushing in different category area.</p>
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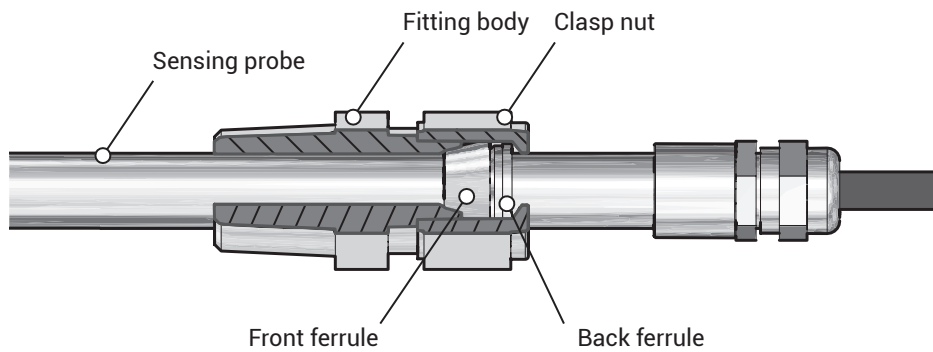


2.4.2 Installing tube fitting – High pressure pipe line or measuring water of liquid (optional)

 EX WARNING	WARNING
	<p>Tube fitting can be used as for Zone bushing. To use such purpose, tube fitting shall be sealed so that protection grade of IP67 is maintained.</p>

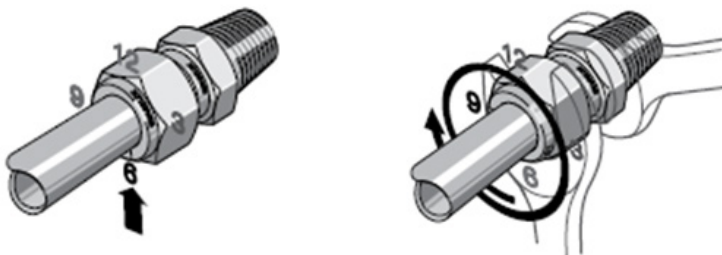
 EX CAUTION	CAUTION
	<p>To prevent that probe is loosened by pressure, make sure to tighten nut and screw carefully. Do not install tube fitting in the environment where pressure is applied.</p>

Tube fitting available to use : SUS316, NPT 1/2" / SUS316, ISO 1/2




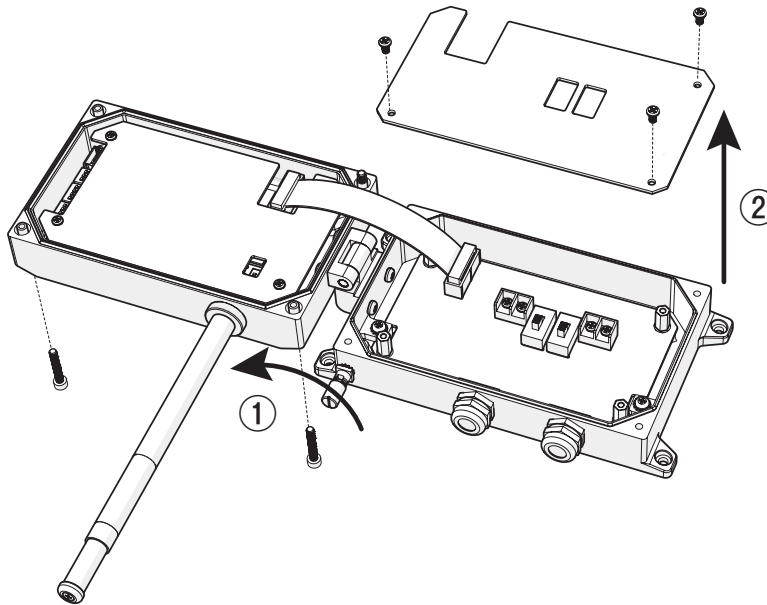
Tightening the clasp nut

- Adjust the probe depth properly for the location to install.
- Tighten clasp nut with hand as much as possible.
- Mark current position on fitting body and clasp nut.
- Tighten the nut 1¼ turn from the marked position using spanner.
- When spanner is used for tightening, fix the fitting body and turn the nut.




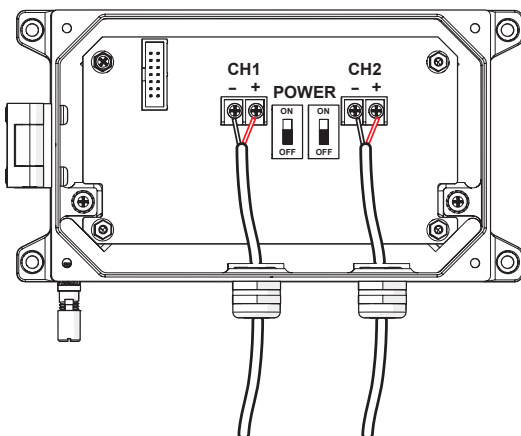
2.5 Electric wiring

 EX WARNING	WARNING
<p>For the installation in hazard area, transmitter shall be connected through galvanic isolator or zener barrier always. Before electric wiring in hazard area, make sure to turn off main power switch of transmitter.</p>	



- To open the front cover, unscrew 4 screws with hex wrench enclosed in the product, and remove flat cable connected to power board.
- Unscrew the screw of power board protection cover, and remove the cover.
- Connect power cable by each channel through cable gland.
- Make sure to turn off power switch before connect power cable to terminal.


 NOTICE	NOTICE
<p>It is recommended to use shield cable. (Use cable meeting EN60079-14 specification)</p>	

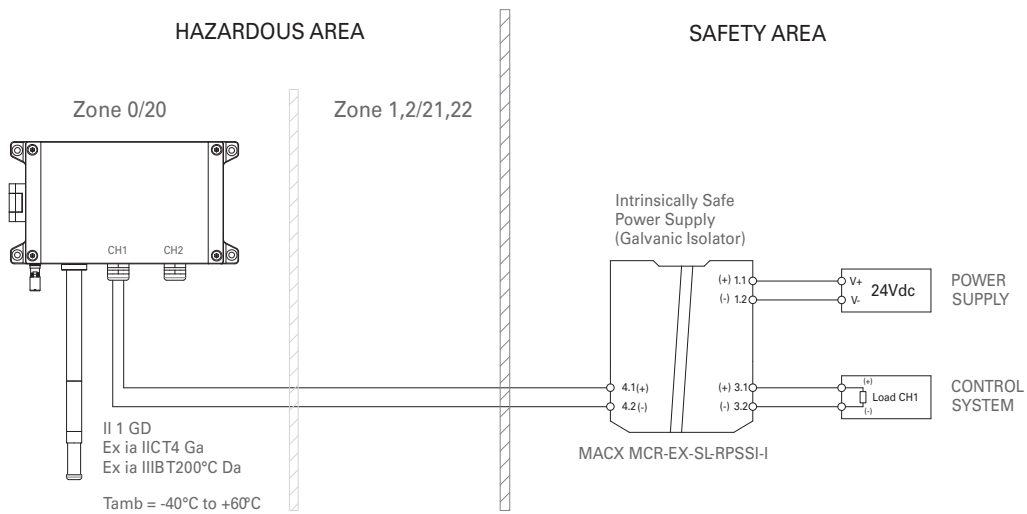


- Each channel requires independent power source, and in order to activate transmitter Power is supplied to CH1.
- If CH2 of transmitter is not used, just supply power to CH1 only.
- After power connection, close protection cover and connect flat cable.
- Turn on main power switch and close front cover.

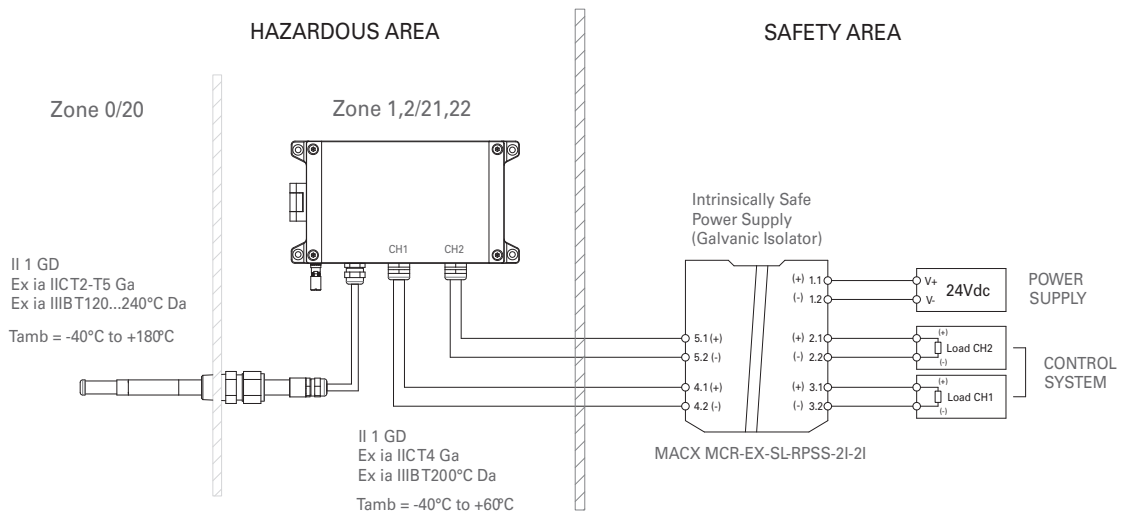
2.6 Installation in hazard area

2.6.1 Category 1 (Zone 0)

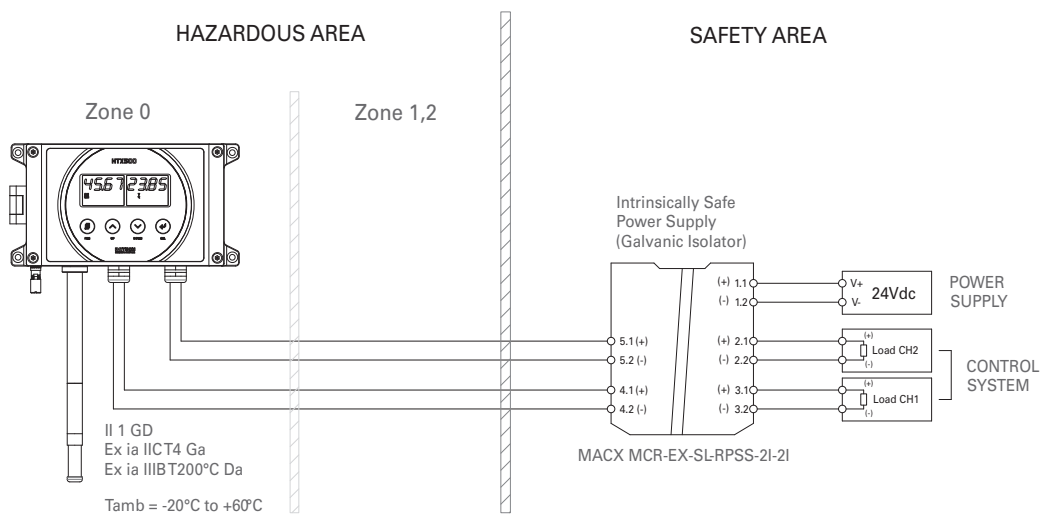
 EX WARNING	WARNING
<p>When HTX500 series is installed in category 1 (Zone 0), it shall be connected through intrinsic safety power supply (galvanic isolator). CH1 and CH2 shall be isolated electrically from each other in operation. The ambient temperature range of display-type transmitter is -20 ~ +60°C.</p>	



Connection example of wall-mount transmitter (1 channels)




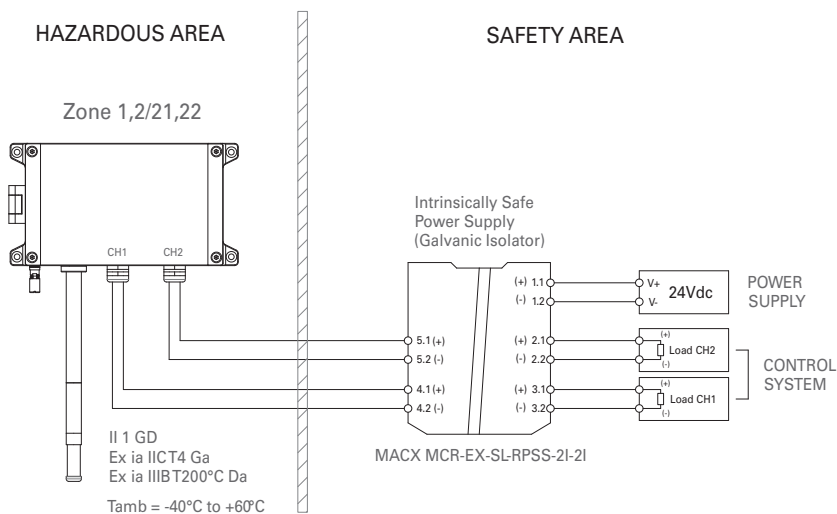
Connection example of remote-probe transmitter (2 channels)



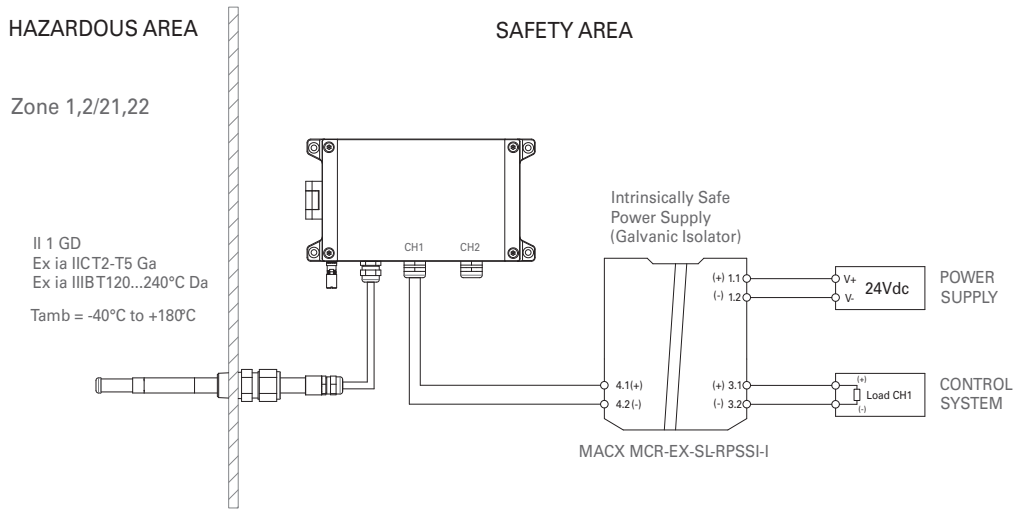
Connection example of display-type transmitter (2 channel)

2.6.2 Category 2,3 (Zone 1,2)

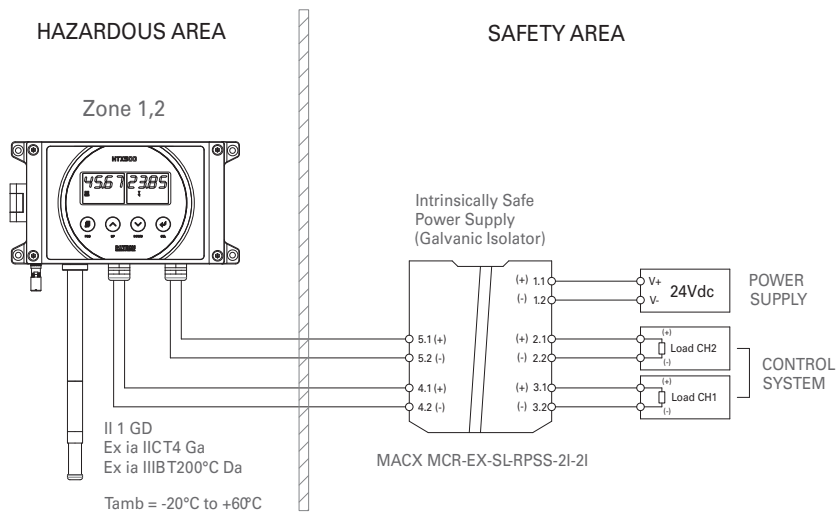
 EX WARNING	WARNING
<p>When HTX500 series is installed in category 2, 3 (Zone 1, 2), it shall be connected through intrinsic safety power supply (galvanic isolator) or zener barrier. CH1 and CH2 shall be isolated electrically from each other in operation. The ambient temperature range of display-type transmitter is -20 ~ +60°C.</p>	



Connection example of wall-mount transmitter (2 channels)



Connection example of remote-probe transmitter (1 channels)



Connection example of display-type transmitter(2 channels)

2.7 Calculating maximum cable length

This example is based on application of intrinsic safety power supply device KFD2–STC4–Ex1.

Standard specification of HTX500:


Supply voltage	$U_{IN} = 24V (12...35V)$
Maximum current	$I_{out} = 20mA$
Minimum operating voltage	$U_{min} = 10V + R_L * 0.02A$

Specifications of KFD2–STC4–Ex1 :

Nominal operating voltage :	$U_N = 24V$
Supply voltage for transmitter	$U_S \geq 16V$ at 20mA
Load resistance	$R_L \leq 800\Omega$ (terminal 8+,7-)

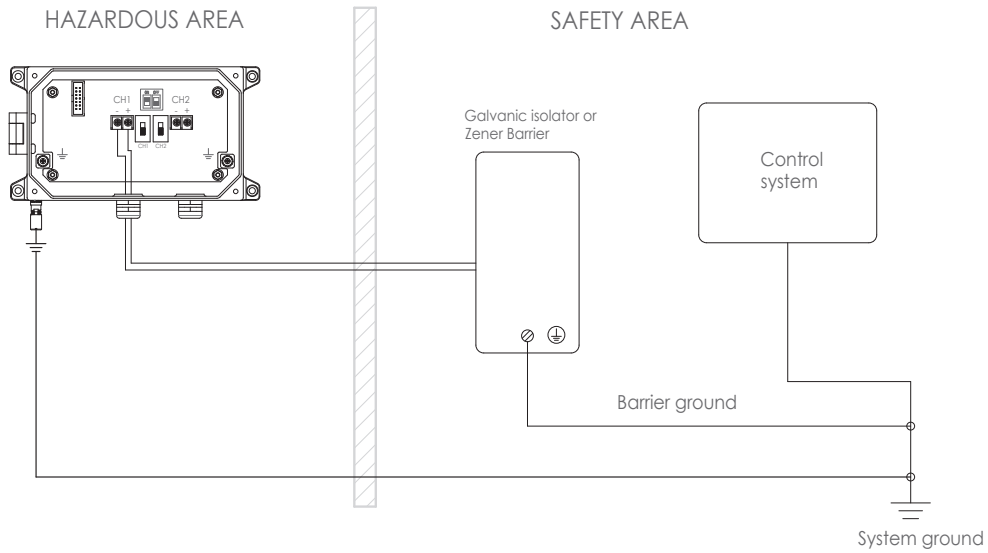
Calculation of cable length between intrinsic safety power supply device and HTX500 transmitter :

Cable resistance	$R_C = 0.084\Omega/m$ (example 24AWG)
Load resistance	$R_L = 125\Omega$ (example)
Minimum operating voltage	$U_{min} = 10V + 125 * 0.02 = 12.5V$
Maximum drop voltage by cable	$U_{drop} = U_S - U_{min} = 16 - 12.5 = 3.5V$
Total resistance of cable	$R_{C\ tot} = R_C * L_{max} * 2$ (supply and return)
Maximum cable length (Lmax)	$U_{drop} = R_{C\ tot} * I_{max}$ $U_{drop} = R_C * L_{max} * 2 * I_{max}$ $L_{max} = U_{drop} / (R_C * 2 * I_{max})$ $L_{max} = 3.5V / (0.084\Omega/m * 2 * 0.02A)$ $L_{max} = 1,040m$

	CAUTION
	The maximum cable length is not the calculation method by intrinsic safety. Cable capacity and inductivity may reduce the maximum cable length.

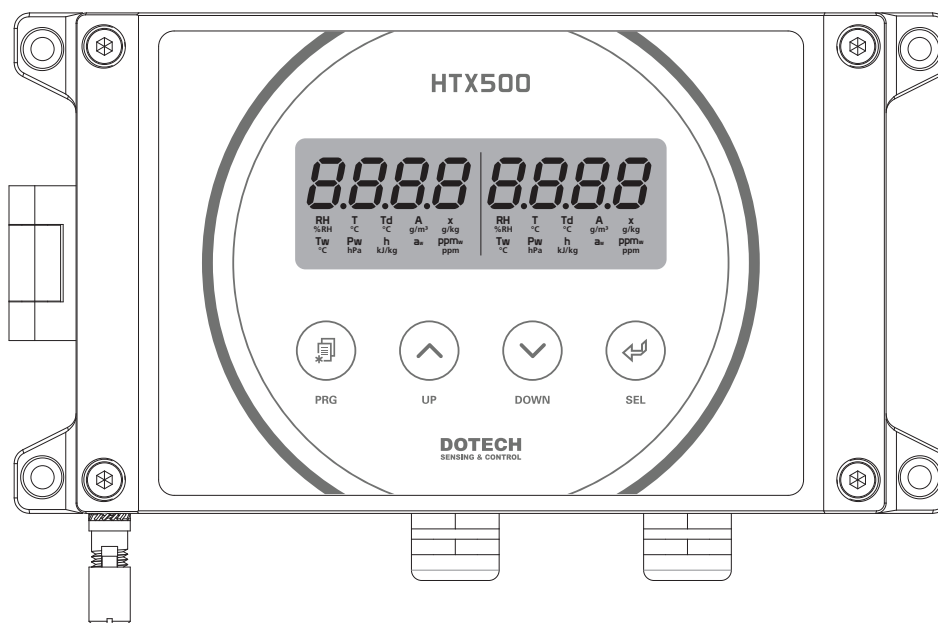
2.8 Grounding

The requirements of installation site shall be complied for grounding transmitter. The thickness of grounding cable of transmitter or safety barrier shall be 4mm² or more. Allowable resistance between barrier and system grounding is within 1 Ω.




3. Operation instruction

3.1 Display and button function



Button	Name	Function
	PRG	Enter program menu
	UP	Value increase
	DOWN	Value decrease
	SEL	Select and move

3.2 Selecting output type

 WARNING	WARNING
	Make sure to turn off transmitter power before DIP switch setting.

HTX series provides not only relative humidity and temperature but about 10 measurement parameters such as dew point temperature and absolute humidity.

User can use by selecting of measurement parameter by each channel through setting of DIP switch.

Factory setting value is applied to the analog scale value for the parameter set by DIP switch.

ON
OFF

1	2	3	4

CH1

1	2	3	4

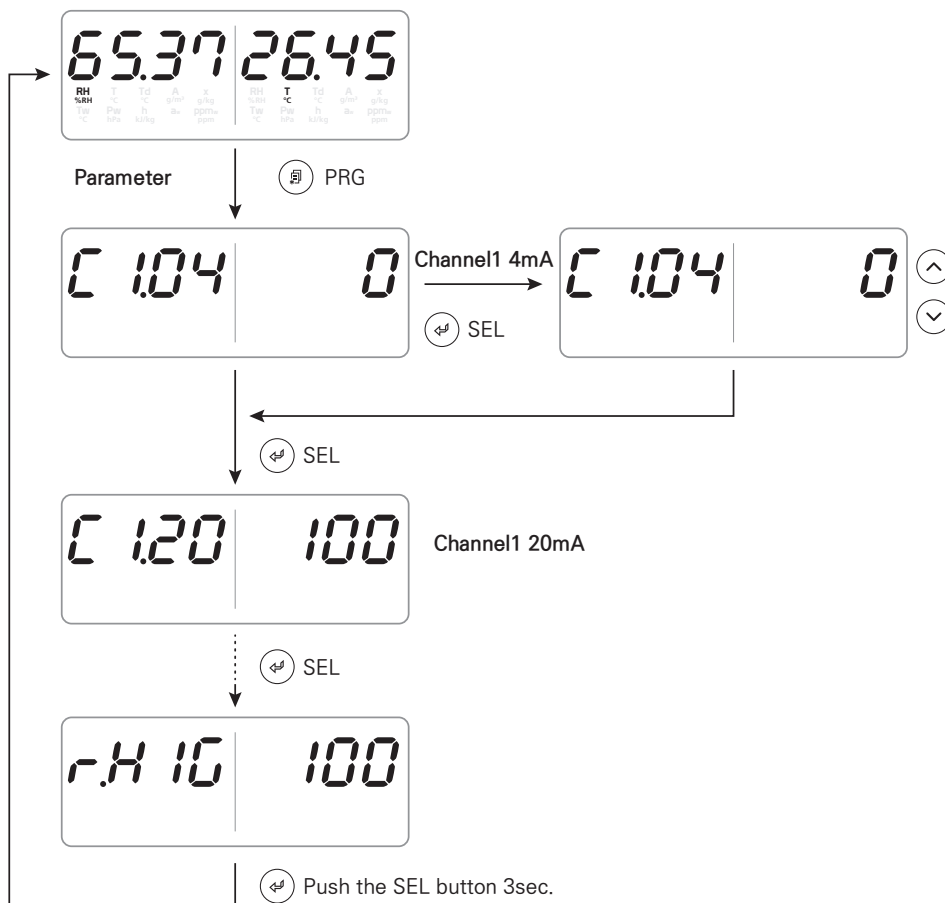
CH2

1	2	3	4	
				RH : Relative humidity
				T : Temperature
				Td : Dewpoint temperature
				A : Absolute humidity
				x : Mixing ratio
				Tw : Wet bulb temperature
				Pw : Water vapour pressure
				h : Enthalpy
				aw : Water activity
				ppmw : Mass concentration of water in oil
				NOT USED

Selection of output quantities

3.3 Analog output scale

Factory setting value is applied to the output scale for the parameter by channel which is set by DIP switch, and setting is available within below range.




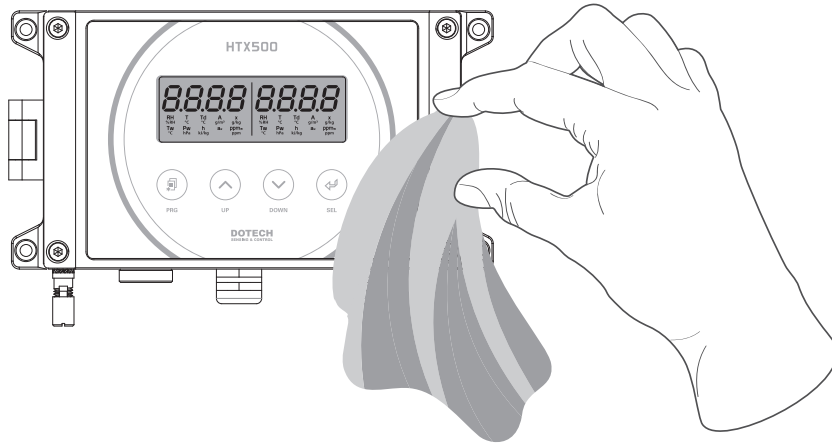
Character	Quantities	Analog scale (metric)	Analog scale (non-metric)
0	Relative humidity	0...100	0...100
1	Temperature	-40...180	-40...356
2	Dew point temperature	-40...180	-40...356
3	Absolute humidity	0...500	0...218
4	Specific gravity of water	0...700	0...4900
5	Wet-bulb temperature	-40...180	-40...356
6	Water vapor partial pressure	0...1000	0...1000
7	Enthalpy	-40...2200	-17...946
8	Water activity	0...1	0...1
9	Oil and water content	0...2000	0...2000

4. Maintenance

 EX WARNING	WARNING
	Operation and maintenance in explosive hazard area shall be carried out by a professional person who is authorized and trained by system manager.

4.1 Display cleaning

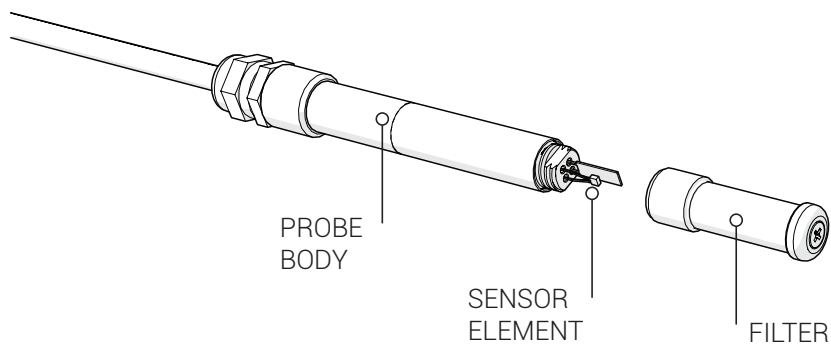
 EX CAUTION	CAUTION
	To prevent static electricity, please wipe display with wet cloth.



4.2 Replacement of sensor protection filter

Sensor protection filter shall be cleaned and replaced regularly. If the sensor filter is blocked by external affection, it may affect response speed of sensor.

In replacing of sensor protection filter, be careful that sensor element and protection filter are not contacted.



5. Technical Data

5.1 General specification

Temperature and humidity transmitter HTX500 series meets ATEX direction for intrinsic safety equipment.

Applied Standards :

EN60079-11:2012 EN60079-0:2012+A11:2013

Ex marking :

Transmitter : Ex ia IIC T4 Ga(Tamb=-40°C to 60°C)

Transmitter : Ex ia IIIB T200°C Da

Remote sensing probe : Ex ia IIC T2-T5 Ga(Tamb=see schedule)

Remote sensing probe : Ex ia IIIB T*** Da(Tamb=see schedule)

Entity parameters :

Ui = 28V, li = 100mA, Pi = 650mW, Ci = 5nF, Li = negligibly low

Ambient Temperature :

Transmitter without display : -40...+60°C

Transmitter with display : -20...+60°C

Remote sensing probe : -40...+180°C

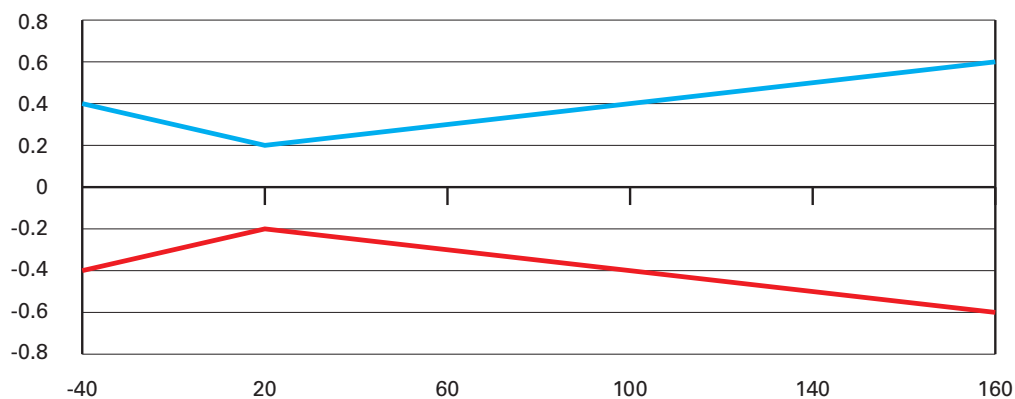
5.2 Temperature and humidity

Humidity

Range	0...100%RH
Precision (including non-linearity, hysteresis and repeatability)	
at 15...30°C	±2%RH (10...90%RH)
	±3%RH (<10%RH, >90%RH)
Response Speed (t90, at 20°C)	<20sec (mesh filter)
	<40sec (sintered filter)

Temperature

Range	-40...60°C (wall mounting)
	-40...180°C (remote sensing probe)
Precision	±0.2°C at +20°C
	Over temperature range (see graph below)
Sensor	Pt100 RTD (DIN EN 60751, Class A)



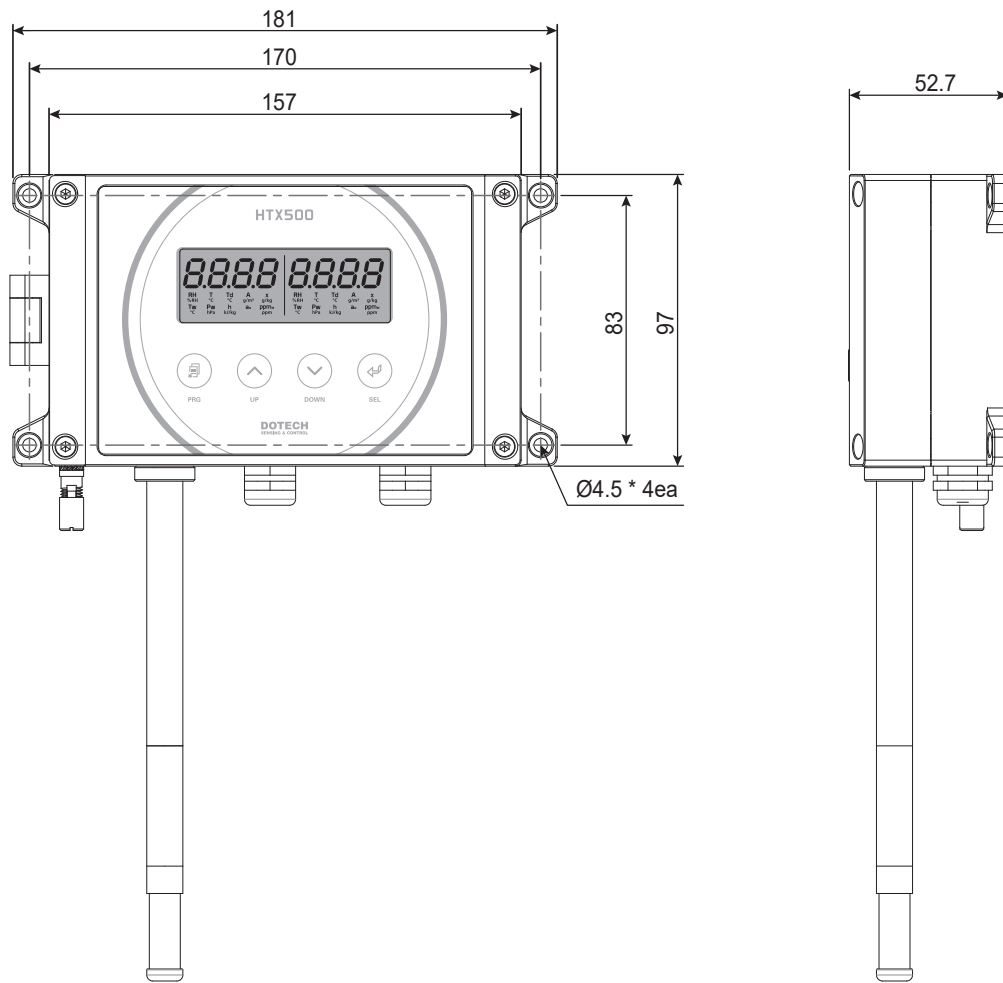
5.3 Analog output

Two analog outputs	2-wire 4...20mA
Accuracy	Typ. $\pm 0.05\%$ F.S at 20°C
Load resistance	$R_L \leq (V_{cc} - 10V) / 0.02A$

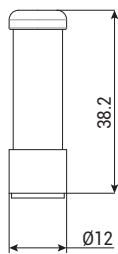
5.4 Standard Specification

Voltage	$V_{cc \text{ min}} = (10 + R_L * 0.02)V_{dc}$, $V_{cc \text{ max}} = 28V_{dc}$
Wiring	Screw Terminals wire : AWG 15-24(1.65 ~ 0.2mm ²) It is recommended that cable end is fitted to fork-terminal
Cable grand	M16, Cable diameter : 4-8mm
Operation Temperature Range	transmitter without display : -40...+60°C transmitter with display : -20...+60°C remote sensing probe : -40...+180°C
Storage Temperature Range	-40...70°C
Housing Material	Stainless steel (SUS 316)
Probe Material	Stainless steel (SUS 304)
Probe Cable	Teflon FEP
Housing Ingress Protection	IP65
Housing Size	181 x 97 x 53 mm
Housing weight	1.74kg (Wall mounting transmitter with LCD)

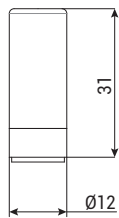
6. Dimensions



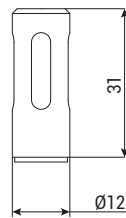
Mesh filter



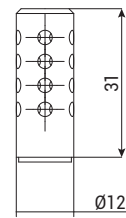
Sintered filter



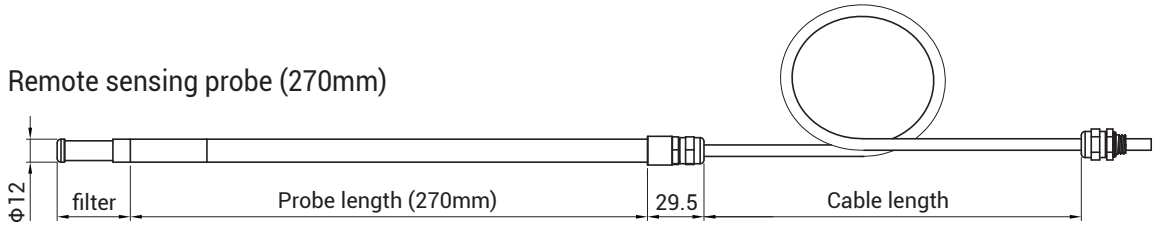
Grid filter



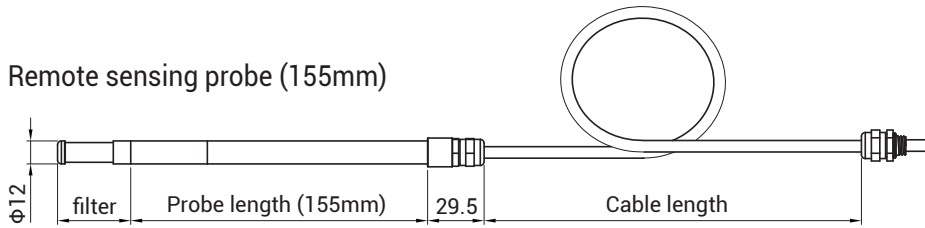
Oil filter



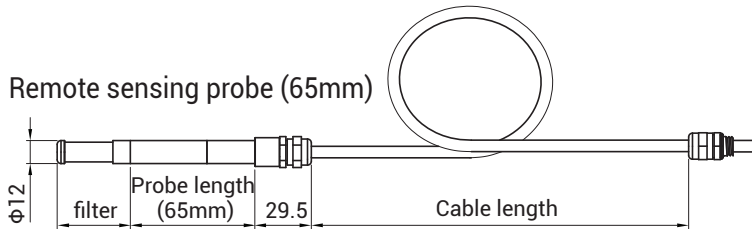
Remote sensing probe (270mm)



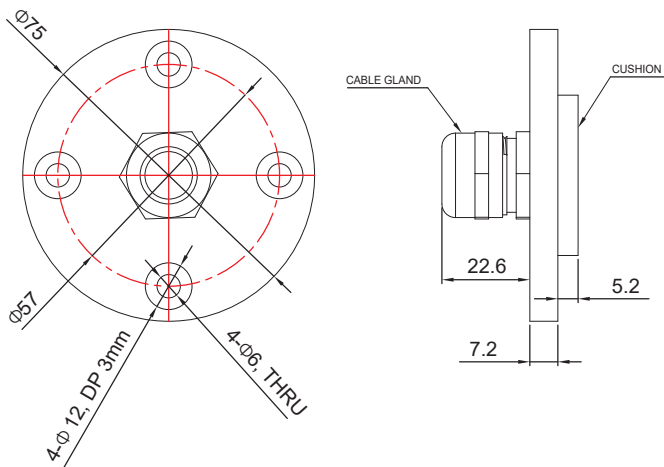
Remote sensing probe (155mm)



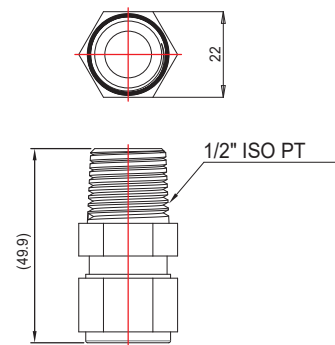
Remote sensing probe (65mm)



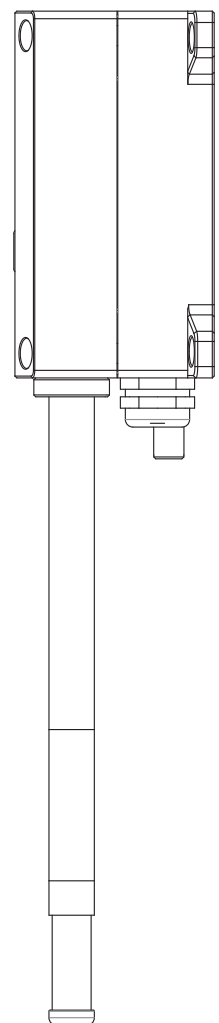
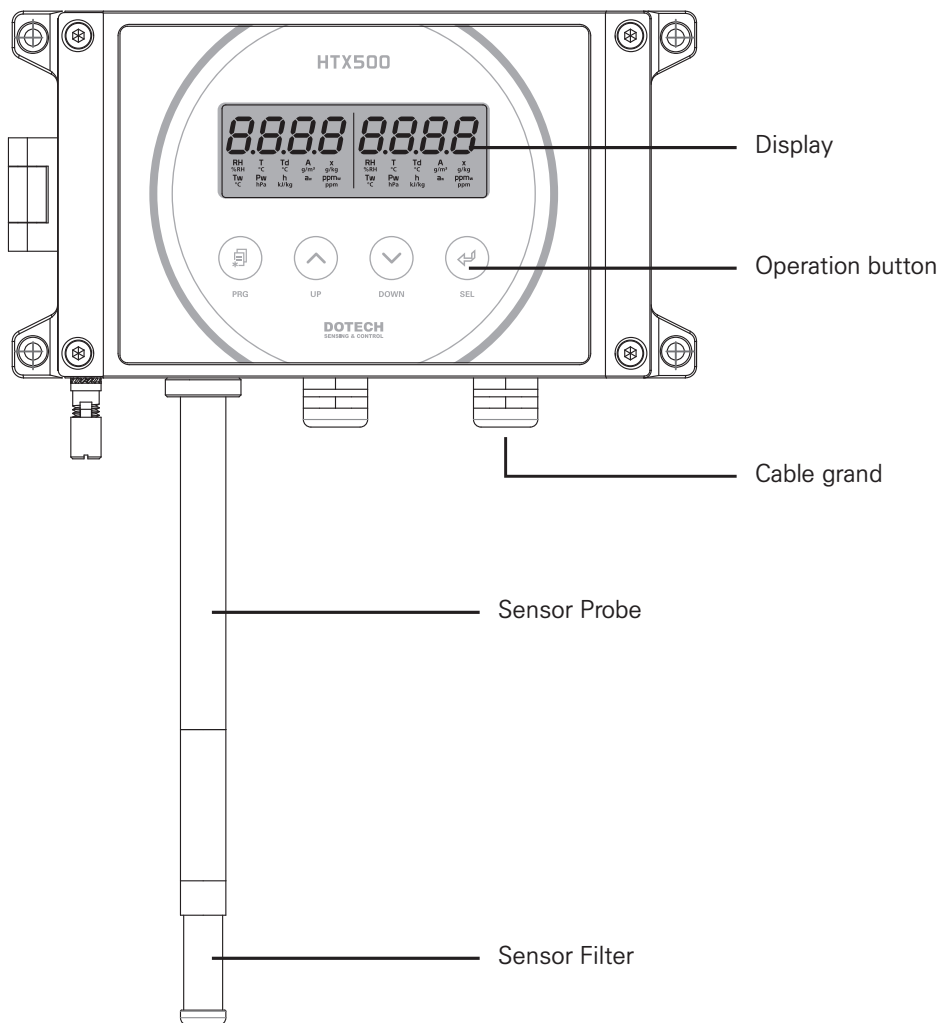
Duct mounting Bracket ass'y



High Pressure Tube Fittings



6.1 Component names



Ordering Guide

DT-CF-151

Humidity and Temperature Transmitter
Model : HTX500

Company :

Name :

Contact number :

HTX500 – –

Transmitter Unit

Humidity and Temperature Transmitter HTX500–		①	②	③	④	⑤	⑥	⑦
① Transmitter Type	Wall mounting	W						
	Remote sensing probe	R						
	Remote sensing probe (pressure tight up to 20bar)	P						
② Display	Without display		x					
	With display		D					
③ Probe Length	None (Wall mounting)			x				
	65mm(2.56") probe length			S				
	155mm(6.1") probe length			M				
	270mm(10.63") probe length			L				
④ Probe Cable Length	None (Wall mounting)				x			
	1m (3.3ft) cable length				1			
	2m (6.6ft) cable length				2			
⑤ Protection Filter Type	Stainless steel mesh filter					M		
	Nikel plated brass sintered filter					S		
	Stainless steel grid filter					G		
	Stainless steel Oil Filter					O		
⑥ Probe Installation Accessories	None						x	
	Duct installation kit						D	
	Feedthrough probe fitting (1/2" ISO PT)						I	
⑦ Ex Certification	ATEX							A
	KCs							K

Software Function

		⑧	⑨	⑩	⑪	⑫
		-				
⑧ Measurement Unit	Metric	M				
	Non-metric	N				
⑨ CH1 Output Quantity	Relative humidity (RH)		R			
	Temperature (T)		T			
	Dewpoint temperature (Td)		D			
	Absolute humidity (A)		A			
	Mixing ratio (x)		X			
	Wet bulb temperature (Tw)		B			
	Water vapour pressure (Pw)		P			
	Enthalpy (h)		H			
	Water activity (aw)		W			
	Mass concentration of water in oil (ppmw)		M			
⑩ CH1 Analog Output Range	Select according "Analog Output Range"			XX		
⑪ CH2 Output Quantity	Relative humidity (RH)				R	
	Temperature (T)				T	
	Dewpoint temperature (Td)				D	
	Absolute humidity (a)				A	
	Mixing ratio (x)				X	
	Wet bulb temperature (Tw)				B	
	Water vapour pressure (Pw)				P	
	Enthalpy (h)				H	
	Water activity (aw)				W	
	Mass concentration of water in oil (ppmw)				M	
⑫ CH2 Analog Output Range	Select according "Analog Output Range"					XX

Analog Output range

Output quantities	Order code	Output range	Order code	Output range	Order code	Output range
Relative Humidity (%RH)	01	0...100				
Temperature (°C) Dewpoint temperature (°C) Wet bulb temperature (°C)	41	-40...180	22	-20...120	15	-10...50
	42	-40...120	21	-20...100	18	-10...80
	48	-40...80	28	-20...80	05	0...50
	46	-40...60	26	-20...60	01	0...100
Absolute humidity (g/m3)	02	0...200	05	0...500		
Mixing ratio (g/kg)	03	0...300	07	0...700		
Water vapour pressure (hPa)	05	1...500	01	0...1000		
Enthalpy (kJ/kg)	45	-40...500	41	-40...1000	42	-40...2200
Water activity	01	0...1				
Mass concentration of water in oil (ppm)	05	0...500	01	0...1000	02	0...2000

Ordering Example

HTX500-WDxxMxA-MR01T26

Description	Code	User select
Transmitter Type	W	Wall mounting
Display	D	With Display
Probe Length	x	None
Probe Cable Length	x	None
Protection Filter Type	M	Stainless steel mesh filter
Probe Installation Accessory	x	None
Ex cetification	A	ATEX
Measurement Unit	M	Metric
CH1 Output Quantity	R	Relative Humidity
CH1 Analog Output Range	01	0...100
CH2 Output Quantity	T	Temperature
CH2 Analog Output Range	26	-20...60

HTX500-RxL2SDK-MR01D42

Description	Code	User select
Transmitter Type	R	Remote sensign probe
Display	x	Without display
Probe Length	L	270mm(10.63") probe length
Probe Cable Length	2	2m (6.6ft) cable length
Protection Filter Type	S	Stainless steel grid filter
Probe Installation Accessory	D	Duct installation kit
Ex cetification	K	KCs
Measurement Unit	M	Metric
CH1 Output Quantity	R	Relative Humidity
CH1 Analog Output Range	01	0...100
CH2 Output Quantity	D	Dewpoint temperature
CH2 Analog Output Range	42	-40...120

Certifications

1. KCs

제 2016-BO-0332 호



안 전 인 증 서

(주)두택

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델	인증번호
HTX500-R/P-D	16-AV2BO-0332X
용량·등급	
Ex ia IIC T4 transmitter: $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$, remote sensor: $-40^{\circ}\text{C} \leq T_a \leq +75^{\circ}\text{C}$:T5/+110 $^{\circ}\text{C}$:T4/+180 $^{\circ}\text{C}$:T2, Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음	

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성 매체의 존재로 인하여 Frame으로부터 CH1은 절연되지 않을 수있으니, 설치 시에 주의 할 것
- 2) 분진층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두택, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0333 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델	인증번호
HTX500-R/P-D	16-AV2BO-0333X
용량·등급	Ex iaD 20 T200℃ transmitter:-20℃≤Ta≤+60℃, remote sensor:-40℃≤Ta≤+60℃:T120℃/+75℃:T135℃/ +110℃:T170℃/+175℃:T235℃/+180℃:T240℃, Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성분진에 사용할 수 없음
- 2) 분진층(Dust)이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0334 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델

HTX500-R/P-x

인증번호

16-AV2BO-0334X

Ex ia IIC T4

transmitter: -40℃ ≤ Ta ≤ +60℃,

용량·등급 remote sensor: -40℃ ≤ Ta ≤ +75℃:T5/+110℃:T4/+180℃:T2,

Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성 매체의 존재로 인하여 Frame으로부터 CH1은 절연되지 않을 수 있으니, 설치 시에 주의 할 것
- 2) 분진층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0335 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델

HTX500-W-x

인증번호

16-AV2BO-0335X

Ex iaD 20 T200℃

-40℃ ≤ Ta ≤ +60℃,

용량·등급

Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성분진에 사용할 수 없음
- 2) 분진(Dust)층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦고, 먼지가 쌓이는 고기류장소에 설치하지 말 것.
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함.

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0336 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델	인증번호
HTX500-W-D	16-AV2BO-0336X
용량·등급	Ex ia IIC T4 -20℃ ≤ Ta ≤ +60℃, Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성 매체의 존재로 인하여 Frame으로부터 CHI은 절연되지 않을 수 있으니, 설치 시에 주의 할 것
- 2) 분진층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0337 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

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품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델

HTX500-W-D

인증번호

16-AV2BO-0337X

용량·등급

Ex iaD 20 T200℃

-20℃ ≤ Ta ≤ +60℃,

Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성분진에 사용할 수 없음
- 2) 분진층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0338 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델	인증번호
HTX500-W-x	16-AV2BO-0338X
용량·등급	Ex ia IIC T4 -40℃ ≤ Ta ≤ +60℃, Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성 매체의 존재로 인하여 Frame으로부터 CH1은 절연되지 않을 수 있으니, 설치 시에 주의 할 것
- 2) 분진(Dust)층이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦고, 먼지가 쌓이는 고기류장소에 설치하지 말 것.
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함.

2016년 09월 01일

한국산업안전보건공단 이사장



제 2016-BO-0339 호



안 전 인 증 서

(주)두텍

경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)

위 사업장에서 제조하는 아래의 품목이 산업안전보건법 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

방폭구조 전기기계·기구(Humidity and temperature transmitter)

형식·모델/용량·등급/인증번호

형식·모델	인증번호
HTX500-R/P-x	16-AV2BO-0339X
	Ex iaD 20 T200℃
	transmitter:-40℃≤Ta≤+60℃,
용량·등급	remote sensor:-40℃≤Ta≤+60℃:T120℃/+75℃:T135℃/ +110℃:T170℃/+175℃:T235℃/+180℃:T240℃,
	Ui=28V, li=100mA, Pi=650mW, Ci=5nF, Li=매우적음

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2013-54호)

인 증 조 건

- 1) 도전성분진에 사용할 수 없음
- 2) 분진층(Dust)이 쌓이지 않게 할 것
- 3) 정전기 발생을 막기 위해서 젖은 헝겊으로 닦아주고, 먼지가 쌓이는 고기류장소에 설치하지 말 것
- 4) 별도로 KCs 안전인증 받은 케이블글랜드를 사용할 것
- 5) (주)두텍, 경기 안산시 단원구 동산로 30 중앙일보빌딩 6층 (원시동)에서 생산되는 제품에 한함

2016년 09월 01일

한국산업안전보건공단 이사장



2. ATEX

Certificate Number
Baseefa15ATEX0241X



Issued 15 December 2015
Page 1 of 3

- 1 **EC - TYPE EXAMINATION CERTIFICATE**
- 2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
Directive 94/9/EC
- 3 EC - Type Examination Certificate Number: **Baseefa15ATEX0241X**
- 4 Equipment or Protective System: **Humidity and Temperature Transmitter HTX500 Series**
- 5 Manufacturer: **DOTECH INC.**
- 6 Address: **6F, JOONGANG-ILBO B/D, 30, Dongsan-ro, Danwon-gu, Ansan-si, Gyeonggi-do, 15434 KOREA**
- 7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- 8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential Report No. **GB/BAS/ExTR15.0153/02**
- 9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012 +A11:2013 EN 60079-11:2012
except in respect of those requirements listed at item 18 of the Schedule.
- 10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- 11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
- 12 The marking of the equipment or protective system shall include the following :
- Ex** II IGD (see schedule)

Baseefa Customer Reference No. **6600**

Project File No. **15/0235**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.baseefa.com/terms-and-conditions.asp>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited

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Registered in England No. 4305578.

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R S SINCLAIR
GENERAL MANAGER

On behalf of SGS Baseefa Limited
Re-issued 4 July 2016 to replace original

Certificate Number
Baseefa15ATEX0241X



Issued 15 December 2015
Page 2 of 3

13 Schedule

14 Certificate Number Baseefa15ATEX0241X

15 Description of Equipment or Protective System

The Humidity and Temperature Transmitter HTX500 series are humidity and temperature transmitters designed to measure the relative humidity and temperature in hazardous areas. Each unit has two isolated channels that are separately powered by a 24V nominal 2-wire loop powered 4-20mA interface.

The equipment is housed in a stainless steel enclosure, with some models having a liquid crystal display behind a window in the front of the enclosure. The sensor contains a temperature measuring device and a humidity measuring device that are either solidly attached to the transmitter or are attached via fixed cable.

The transmitter is marked:-

Ex ia IIC T4 Ga (Tamb = -40°C to +60°C)

Ex ia IIIB T200°C Da (Tamb = -40°C to +60°C)

Some models may be marked with a reduced temperature range.

The temperature class and the dust surface temperature applicable to the remote sensing probe where one is present are dependent on the ambient temperature range:-

Tamb = -40°C to +60°C: T5, T120°C

Tamb = -40°C to +75°C: T5, T135°C

Tamb = -40°C to +110°C: T4, T170°C

Tamb = -40°C to +175°C: T2, T235°C

Tamb = -40°C to +180°C: T2, T240°C

16 Report Number

GB/BAS/ExTR15.0153/02

17 Specific Conditions of Use

1. Channel I is considered not isolated from frame due to the potential presence of a conducting medium. This must be taken into account during installation.
2. The build-up of dust layers on the equipment is not permitted.
3. To avoid the build up of electrostatic charge, the equipment should only be cleaned with a damp cloth and should not be mounted in dust laden high airflow areas.

18 Essential Health and Safety Requirements

As follows, in addition to those covered by the standards at item 9.

Clause	Subject	Compliance
1.2.7	LVD type requirements	Standards require manufacturer's declaration.
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer's instructions
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues.
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues.

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19 Drawings and Documents

Number	Sheet	Issue	Date	Description
ES150194D(HTX500)	1	D	December 03 2015	Terminal Board
ES150194D(HTX500)	2	D	December 03 2015	CH1 Current Loop
ES150194D(HTX500)	3	D	December 03 2015	MCU Part
ES150194D(HTX500)	4	D	December 03 2015	Sensor Interface
ES150194D(HTX500)	5	D	December 03 2015	CH2 Current Loop
DT-HTX500-01	1	-	2015.12.08	Wall Mounting Display Transmitter
DT-HTX500-02	1	-	2015.12.08	Remote Transmitter
DT-HTX500-03	1	-	2015.08.13	Filter
DT-HTX500-04	1	-	2015.12.08	Remote Probe
DT-HTX500-05	1	-	2015.12.08	Probe Accessory
DT-HTX500-06	1	-	2015.12.08	Wall Mounting Display Transmitter Explode
DT-HTX500-07	1	-	2015.12.08	Wall Mounting Transmitter Explode
DT-HTX500-08	1	-	2015.12.08	Remote Transmitter Explode
DT-HTX500-09	1	-	2015.12.08	Remote Display Transmitter Explode
DT-HTX500-10	1	-	2015.12.08	Probe Section
DT-HTX500-11	1	-	2015.12.08	Cable/14P/100mm
DT-HTX-500-18	1	-	2015.12.07	Power PCB Top Layer
DT-HTX-500-19	1	-	2015.12.07	Power PCB Bottom Layer
DT-HTX-500-20	1	-	2015.12.07	Main PCB Top Layer
DT-HTX-500-21	1	-	2015.12.07	Main PCB Bottom Layer
DT-HTX-500-22	1	-	2015.12.14	Sensor Probe Cable Position
DT-HTX-500-23	1	-	2015.12.15	Label



Issued: 18-12-2020

TRANSFER REGISTRATION (6600)

This is to certify that the following transfer has been completed:

Holder of certificate: **DOTECH Inc**
 6f, Joongang-ilbo b/d, 30 Dongsan-ro, Danwon-gu, Ansan-si, Gyeonggi-do, 15434 South Korea

Transfer Details: The certificates listed below have been transferred

From: **SGS Baseefa Ltd**, Rockhead Business Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ, UK
 (EU Notified Body Number: 1180)

To: **SGS Fimko Oy**, Takomotie 8, FI-00380 Helsinki, Finland
 (EU Notified Body Number: 0598)

Certificates affected:
 Baseefa15ATEX0241X

The purpose of this document is to permit existing information (for example on Certificate Schedule Drawings or label marking) to be replaced by equivalent new information as described above. No other change may be made to the certified design.

If your Notified Body responsible for production supervision is also changing at this time, this document also permits you to change the Notified Body Number within the label marking detail on the relevant drawing.

This document is issued by the Company subject to their General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of their intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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 e-mail sgs.fimko@sgs.com
 web site www.sgs.fi
 Business ID 0978538-5 Member of the
 SGS Group (SGA SA)

R S SINCLAIR
 Authorised Signatory for SGS Fimko Oy
 Technical Manager SGS Baseefa Ltd.

Declaration of Conformity

Manufacturer : DOTECH INC.
 Address : 6F, JOONGANG-ILBO B/D, 30, Dongsan-ro, Danwon-gu, Ansan-si,
 Gyeonggi-do, KOREA

in accordance with the following directive and harmonized standard(s) :

Directive(s) :

ATEX Directive (2014/34/EU)
EMC Directive (2014/30/EU)
RoHS Directive (2011/65/EU)

Standard(s) :

EN 60079-0:2012+A11:2013 ; EN 60079-11:2012

hereby declare that:

Equipment : Humidity and Temperature Transmitter

Model name : HTX500 series

Marking :  II 1 GD

Baseefa15ATEX0241X

Transmitter : Ex ia IIC T4 Ga (Tamb = -40 °C to +60 °C)

Transmitter : Ex ia IIIB T200 °C Da

Remote sensing probe : Ex ia IIC T2-T5 Ga (Tamb = see schedule)

Remote sensing probe : Ex ia IIIB T*** °C Da (Tamb = see schedule)

Notified Body : **SGS Fimko Oy [Number : 0598]**
 Takomotie 8, FI-00380 Helsinki, Finland

is in conformity with the applicable requirements.

I hereby declare that the equipment named above has been designed to comply with the described directive(s) and standard(s).

The following information describes for special conditions of HTX500 series

1. Channel 1 is considered not isolated from frame due to the potential presence of a conducting medium.
This must be taken into account during installation.
2. The build-up of dust layers on the equipment is not permitted
3. To avoid the build up of electrostatic charge, the equipment should only be cleaned with a damp cloth and should not be mounted in dust laden high airflow areas.

Signed by :

26. 05. 2021
date

Deuk-nam Choi
CEO


Signature

DOTECH
SENSING & CONTROL