

INSTRUCTION MANUAL

(IDX-OM-B030)

IDG3 , IDG3H
IDG3M , IDG3HM
IDG3V , IDG3HV
IDG5 , IDG5H
IDG5M , IDG5HM
IDG5V , IDG5HV

MODEL

MEMBRANE AIR DRYER MEMBRANE AIR DRYER UNIT

Before operating, you should first thoroughly read this manual. Keep this instruction manual. Specification and equipment are subject to change without any obligation on the part of the manufacturer.

Safety cautions

Each and individual product have its own operating specification. Operate product with out of specification conditions could lead to failure of product. Follow product specification and cautionary points before & during installation and operation.



Caution

Ignoring of emphasized notification could cause mis-handle of product which may lead to the injured of people and the damage of things.

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! Caution Operation

- Make sure to operate with in specifications. (Refer to P.7.)
- Any of substances in table 1 should not be contained in compressed air and surrounding.
[If any of them is contained, it causes the damage of case.]

Table 1. Harmful substances

Type	Harmful substances
Solvent	Acetone, benzene, phenol, toluene, trichloroethylene, cresol, thinner, aniline, chloroform, methyl, alcohol, dioxane, tetrahydrofuran, methylene chloride, xylene, cyclohexanone, carbon tetrachloride, etc.
Acid	Surfuric acid, nitric acid, hydrochloric acid, acetic acid, latic acid, chromic acid, etc.
Gas	Chlorine, sulfurous acid, hydrogen sulfide, bromine, etc.
Oil	Hydraulic fluid (Phosphatic ester), fuel oil, kerosene, water soluble cutting fluid (alkaline), etc.

- Do not use it as breathing air dehumidifier.
- In case of using modular connecting mist separator or micro mist separator {IDG3*M(V), IDG5*M(V)}, make sure that equipment is depressurized to zero before operation and case is locked with a click before operation.
- Operating pressure should be below 0.85MPa.
- Working fluid and ambient temperature should be between -5°C and 55°C. (Not frozen)

⚠ Caution Installation

- On inlet side of membrane air dryer, surely install mist separator and micro mist separator.
[Without them, it does not perform well because water and oil flow in.]

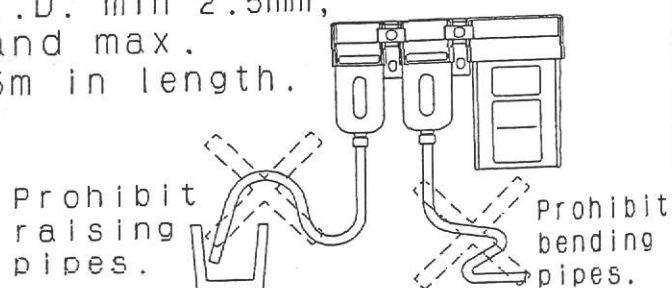
Table 2. Recommendable separators

Description	Model number
Mist separator	AM150-□□C AFM20-□□-C
Micro mist separator	AMD150-□□C AFD20-□□-C

For details of each separator, refer to our catalogues of "Air cleaning equipment" "Mist separator" and "Micro mist separator".

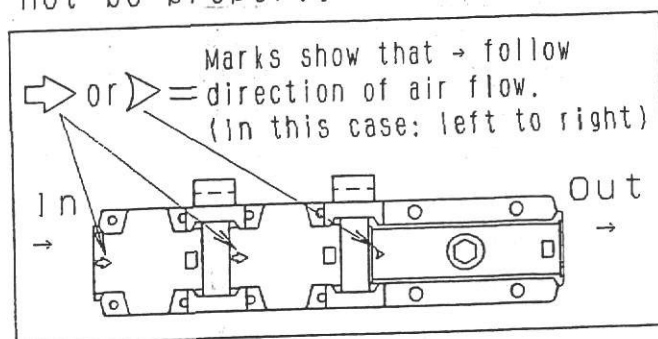
- Do not raise or bend drain pipes of mist separator and micro mist separator on inlet side of membrane air dryer.
[If do so, drain flows in without exhausting, and it lowers the performance.]

Drain pipes should be
I.D. min 2.5mm,
and max.
5m in length.



- Install pressure reducing valve on outlet side of membrane air dryer.
[If it is installed on inlet side, performance goes down due to pressure down.]
- Do not cover outlet portion of purging air with others. (Refer to P.9.)
[If this portion is covered, it lowers performance.]
- Keep minimum clearance of 100mm under this equipment.
(Refer to P.7,8.)

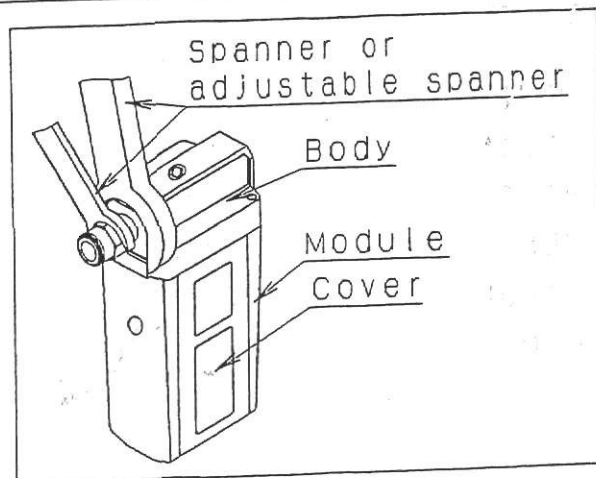
- Flush pipes before installation.
- Install IDG3*M(V), IDG5*M(V) in vertical direction.
(IDG3*, IDG5* can be install in any direction.)
- Do not confuse inlet and outlet of compressed air.
[If compressed air does not flow in correct direction, performance can not be proper.]



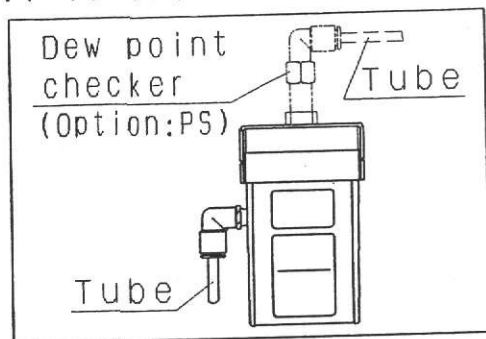
- Install where rainwater and direct sunlight are shutted out.
- Do not install in places subjected to vibration.
- Tighten pipes fixing body with spanner or adjustable spanner. Must not turn over it holding case by hands. [If not, it causes the damage of case.]

Table 3. Tightening torque

Port size	Tightening torque N·m
1/8	7 ~ 9
1/4	12 ~ 14



- Tube size with one touch fitting (Option P,PS) for purging use please refer to P.7 for purging air tube size and length of tube should be 5m and below. For purging air tube 5m and above, please do not install valve if tube is bend or constructed. If the dehumidifying performance will lower.



⚠ Caution Maintenance

- Make sure that equipment is depressurized to zero before maintenance.

[It is dangerous resulting in damage and slipping out of parts.]

<Daily maintenance>

- Ensure that drain, which gather in internal mist separator and micro-mist separator installed of inlet side, does not go beyond the maximum drain level during operation. [Going over the maximum drain level, drain flows in and causes drop in performance.]
- During use, check that the auto Drain installed at the inlet side of the mist separator and the micro-mist separator function properly. Ensure that the rain exhaust normally in proper timing. In case where the auto drain fails to

function referred in P.5 about "CLEANING OF AUTO DRAIN".

- Confirm normal performance of membrane air dryer by color of grains inside the dew point checker. (Option:S,PS)

Table 4.

Condition of membrane air dryer

Color of dew point checker	Condition of function
Blue	Functioning normally
Pink, white, brown	Performance is going down

(When color of grains turns pink, white or brown, refer to P.8)

Note: It takes approximately one hour after supplying air for grains dew point checker to react.

<Monthly maintenance>

- For autodrain mounted on internal mist separator and micro-mist separator content of "Cleaning of auto drain"(P.5) should be practiced.

<Bi-yearly maintenance>

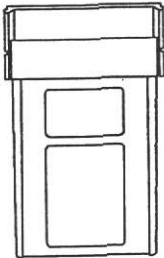
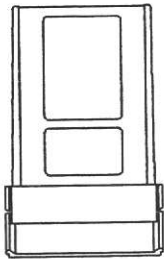
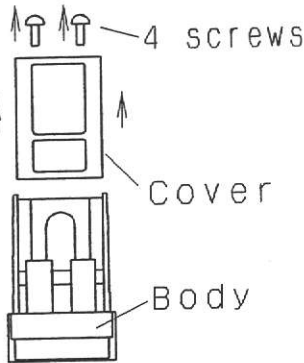
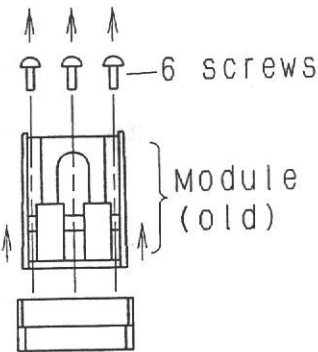
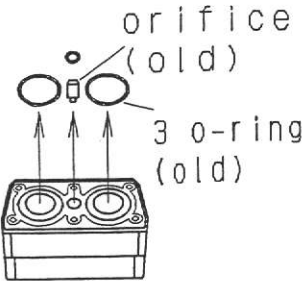
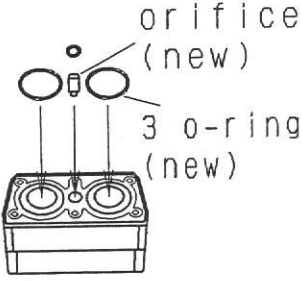
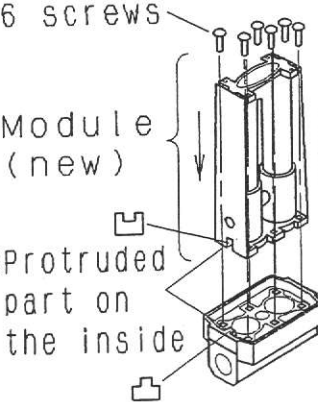
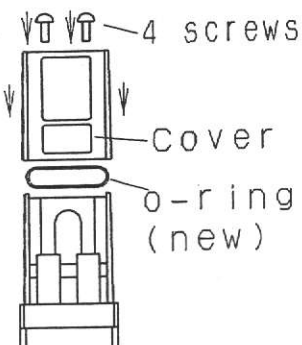
- For internal mist separator and micro-mist separator on inlet side, content of "Replacement of element" (P.5) should be practiced. Within the 2 years period, if the pressure drop for the whole unit of membrane air dryer reaches to 0.2MPa replaces the element for new one.

<Maintenance:Once in 4 years>

- Replacement of Module Set should be done after operation of approximate 2 years. Refer to "Replacement of module set"(P.4). When the condition stated in table 4 reaces, exchange dew point checker.

Replacement of module set

- ① Make sure that equipment is depressurized to zero before maintenance.
- ② Invent the module set before dismantling.
- ③ Remove 4 screws attaching case to body and remove the case vertically.
- ④ Remove 6 screws attaching module to body, then remove module set (old) from body.
- ⑤ Remove o-ring (3pcs.) and orifice from body.
- ⑥ first, install new orifice. Then, install 3pcs. of new o-ring in body.
- ⑦ Install Membrane module on body with 6pcs. of screws.
Note: Ensure the protrusion at body fix properly at slot of Membrane module.
- ⑧ Install new o-ring at below of module.
Then, insert cover and fasten it with 4 screws from the below of cover.

<p>① Depressurize to zero!</p>  <p>Membrane air dryer</p>	<p>② Invent before dismantling.</p> 	<p>③ Unscrew the cover.</p>  <p>4 screws Cover Body</p>	<p>④ Remove the module set.</p>  <p>6 screws Module (old)</p>
<p>⑤ Dismantle the o-ring and orifice.</p>  <p>orifice (old) 3 o-ring (old)</p>	<p>⑥ Re-install the o-ring and orifice.</p>  <p>orifice (new) 3 o-ring (new)</p>	<p>⑦ Insert to module set.</p>  <p>6 screws Module (new) *Protruded part on the inside</p>	<p>⑧ Re-install the cover.</p>  <p>4 screws Cover o-ring (new)</p>

Cleaning of auto drain

- Clean auto drain of each separator installed in 1DG3*M(V), 1DG5*M(V) at least once a month, following the cleaning procedure below.

Cleaning procedure

- ① Make sure that equipment is depressurized before dis-assembling it for cleaning.
- ② Take off the case by turning of it.
- ③ Pour water mixed with neutral detergent inside the case and shake it well to clean. [Do not use other than neutral detergent.] (Refer to P.1.)
- ④ Assemble the case by turning of it.
Then, check whether body and case is in firmly attached.

Replacement of element

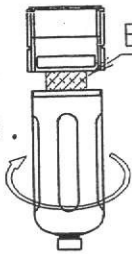


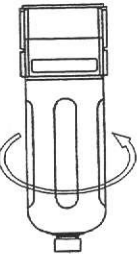
- Replacement of elements for each separator installed in 1DG3*M(V), 1DG5*M(V), should be done after operation of approximate 2 years. Refer to the replacing procedure below. If pressure drop of 1DG3*M(V), 1DG5*M(V) reaches 0.2MPa, replace elements even before the specified date comes.

Table 5. Parts no. for spare element

Description & model	Part no. for element	Qty
Mist separator (AFM20)	AFM20P-060AS	1
Micro-mist separator (AFD20)	AFD20P-060AS	1

Replacing procedure

- ① Make sure that equipment is depressurized to zero.
- ② Take off the case by turning of it.
- ③ turn old element counterclockwise to take body. Install new element
- ④ Assemble the case by turning of it.
Then, check whether body and case is in firmly attached.

<p>① Depressurize to zero!</p>	<p>② Take off the case.</p>  <p>Element</p>
<p>③ Cleaning of auto drain [Only neutral detergent]</p>  <p>Replacement of element</p>  <p>Take off Set</p>	<p>④ Install the case.</p> <p><u>Check that case do not fall apart.</u></p> 

Troubleshooting

● If something abnormal has occurred by any possibility, examine it following the table below. And yet if it cannot be handled, contact any selling agency or our office located nearest you. [Make sure that equipment is depressurized to zero before maintenance or repair.]

Situations	Causes	Solutions
<ul style="list-style-type: none"> ● When there is moisture and oil mist flowing out from membrane air dryer's out port. <p>[Color of grains in dew point checker is turning pink, white or brown.]</p>	<ul style="list-style-type: none"> ● Water and oil flow into membrane air dryer. 	<ul style="list-style-type: none"> ● Check the operating condition of each separators. If they do not operate properly, examine and repair them. (Refer to P.5.) ● Check drain piping of mist each separators. If they rise or bend, remove rising parts and straighten drain piping. ● If elements of each separators are not replaced properly, install again with correct method. (Refer to P.5.) <p>Note: If color of grains inside dew point checker is brown, the dew point checker and module set should be replaced.</p>
<ul style="list-style-type: none"> ● Performance is unsatisfactory. <p>[Color of grains in dew point checker is turning pink or white.]</p>	<ul style="list-style-type: none"> ● Inlet air temperature is high. 	<ul style="list-style-type: none"> ● Improve ventilation to lower the ambient temperature of where air compressor is installed. (Lower inlet air temperature.) ● Install after cooler or something substituted for on inlet side of membrane air dryer to lower air temperature.
	<ul style="list-style-type: none"> ● Ambient temperature is high. 	<ul style="list-style-type: none"> ● Improve ventilation to lower the ambient temperature.
	<ul style="list-style-type: none"> ● Air flow rate is large. 	<ul style="list-style-type: none"> ● Check the specifications, reduce the flow rate to lower than rated flow rate.
	<ul style="list-style-type: none"> ● Inlet air pressure is low. 	<ul style="list-style-type: none"> ● Check the specifications, raise the pressure to more than minimum working pressure.
	<ul style="list-style-type: none"> ● Purging air volume is small. 	<ul style="list-style-type: none"> ● Check outlet for purging air. ● Check the purging air piping. <ul style="list-style-type: none"> a. Remove any block on bend on the purging air piping. b. Piping for purging air is reduce or longer than specified length, refer to P.2,7 for correction. c. Do not merge purging air line piping flow.
<ul style="list-style-type: none"> ● [Grains in dew point checker are crushed.] 	<ul style="list-style-type: none"> ● Water flow into membrane air dryer. 	<ul style="list-style-type: none"> ● Replace dew point checker.

[]: When dew point checker is attached.

Specifications

Standard dew point		-20 °C		-15 °C	
Model		IDG3(M,V)	IDG5(M,V)	IDG3H(M,V)	IDG5H(M,V)
Condition	Max.working press.	0.85MPa			
	Min.working press.	0.3 MPa			
	Working fluid	Compressed air			
	Ambient and working fluid temp.	-5~55°C(Not frozen)			
Performance	Outlet air dew point (Atmospheric press.)	-20 °C		-15 °C	
	Inlet air flow rate L/min(ANR) Note1 Note2	31(32)	62(63)	28(29)	56(57)
	Outlet air flow rate L/min(ANR)	25	50	25	50
	Outlet air flow rate L/min(ANR) Note2	6(7)	12(13)	3(4)	6(7)
	Inlet air press.	0.7MPa			
	Inlet air temp.	25°C(Saturated)			
	Ambient temp.	25°C			
	Regulator structure (Note3)	Type relief			
Port size(Keys nominal B)		1/8, 1/4			

Note1: ANR means flow rate converted into values at atmospheric pressure of 20°C.

Note2: Value specified within () is for IDG with Dew Point Checker.

Note3: Type V

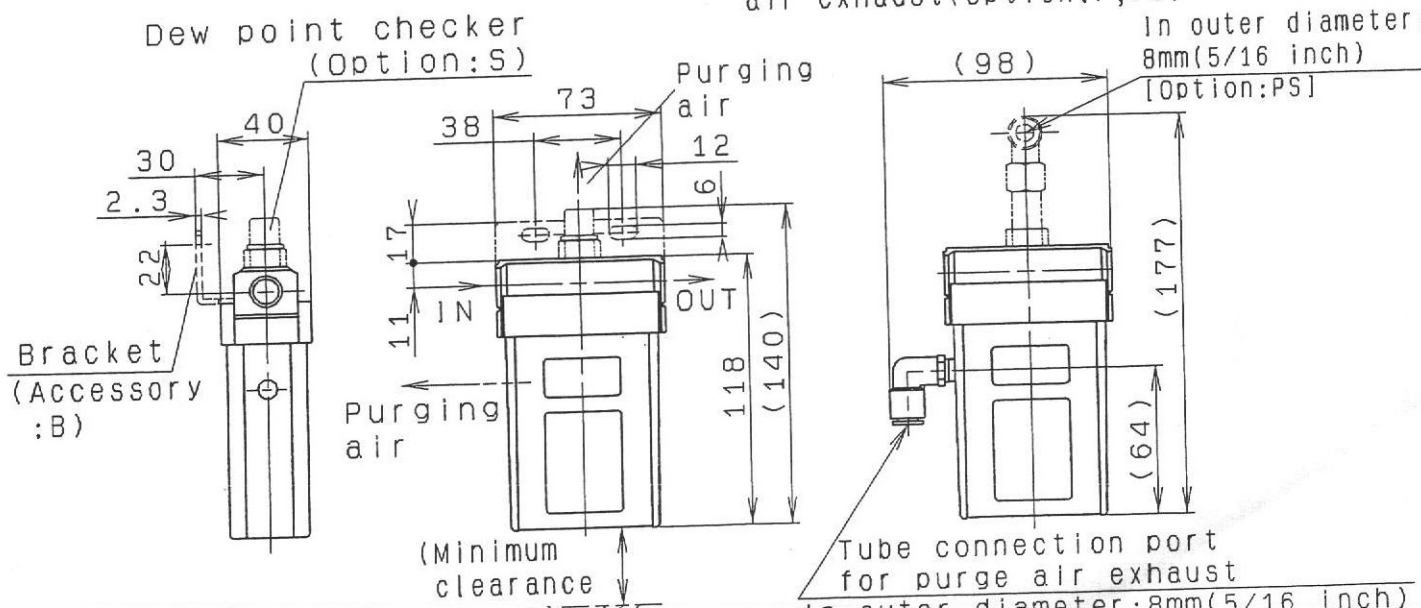
Model	IDG3*, IDG5*	IDG3*M, IDG5*M	IDG3*V, IDG5*V
Mass kg	0.25kg (with Bracket: 0.31kg)	0.83kg (with Auto Drain: 0.9kg)	1.28kg (with Auto Drain: 1.35kg)

Dimensions

IDG3*, IDG5*

IDG3*-P, IDG5*-P(-PS)

One touch fitting for purge air exhaust (Option: P, PS)



IDG3*M, IDG5*M

Dew point checker
(Option:S)

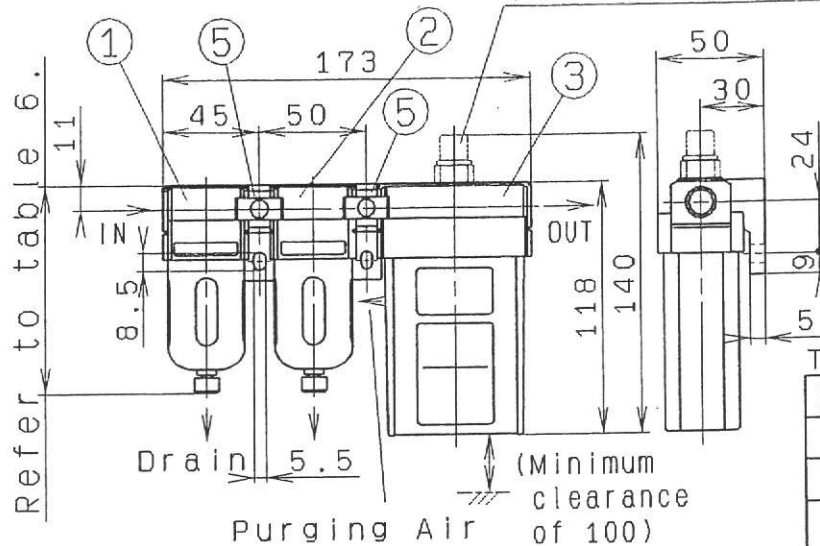


Table 6. Exhausting method

Manual valve (Sym:Nil)	Auto Drain (Type N.C.) (Sym:C)

Table 7. Component equipments

No	Model	Description	Qty
1	AFM20	Mist separator	1
2	AFD20	Micro mist separator	1
3	IDG3, 3H IDG5, 5H	Membrane air dryer	1
4	AR20	Regulator	1
5	Y20L	Spacer with L shaped bracket	2
6	Y20	Spacer	1
7	E20L-01,02	Piping adaptor	1
8	1/8, 1/4	Nipple	1

Note: No.4,6: Only type V
No.7,8: Only type M-P

IDG3*M-P, IDG5*M-P (-PS)

One touch fitting for purge
air exhaust (Option:P,PS)

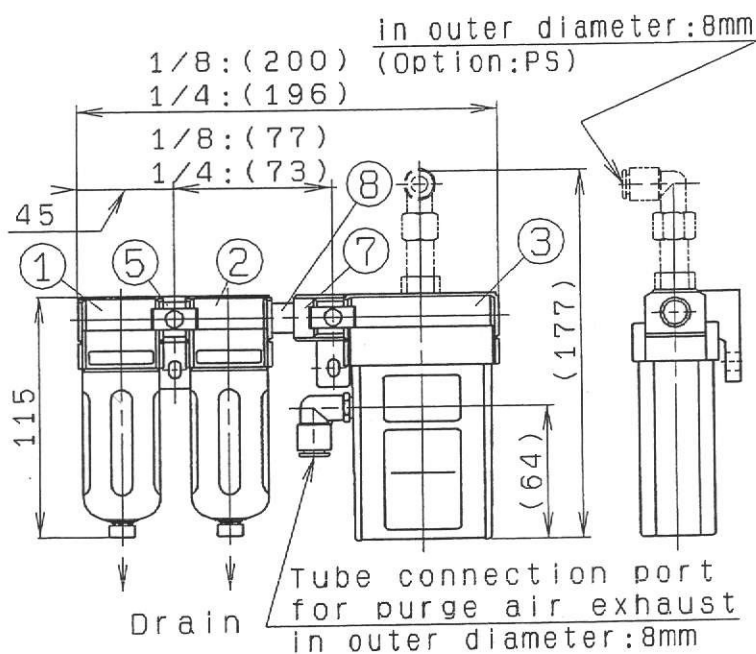


Table 8. Spare parts

No	Part no.	Part name		Qty
A	AFM20P-060AS	Element		1
B	AFD20P-060AS	Element		1
C	C2SF-C	Case assembly		2
D	AD27-C	Auto drain		2
E	IDG-EL3	Module set	For IDG3	1
	IDG-EL3H		For IDG3H	1
	IDG-EL5		For IDG5	1
	IDG-EL5H		For IDG5H	1

Dew point checker
(Option:S)

IDG3*V, IDG5*V

