Iwaki EFS Electromagnetic Flow Sensor
for the EWN-Y electromagnetic metering pump
Instruction manual

Read through this instruction manual before use!
See the EWN-Y instruction manual for installation, wiring, operation and maintenance.

T757-1 '12/12

■Safety instructions

⚠Turn off power!
Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed.

⚠Wear protective clothing!
Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work.

⚠Do not modify this product!
Alterations to the pump carries a high degree of risk. It is not the manufacturer's responsibility for any failure or injury resulting from alterations to the pump.

⚠Do not use the pump in a wet location!
Use of this product in wet or extremely humid locations could lead to electric shock or short circuit.

⚠Do not use this product in any condition other than its intended purpose!
The use of this product in any conditions other than those clearly specified may result in failure or injury. Use this product in specified conditions only.

⚠Non-freezing!
Risk of failure. Do not allow liquid to freeze in the flow path of this product. Use a heater to prevent liquid from freezing up when an ambient temperature is very low.

⚠Do no use a damaged product!
Use of a damaged product could lead to an electric shock or death.

■Product outline
This product is designed for use with the EWN-Y to make automatic flow control by monitoring a flow rate at the outlet of pump head.

■Identification code

EFS-05 - F T - _
　a　　　b c　d

a : Model

Code	Applicable pumps
EFS-05	EWN-B11/-B16/-B21/-C16/-C21
EFS-10	EWN-B31/-C31/-C36

b : Body material
　F : PVDF

c : Wet ends

Code	Electrode	O ring
T	Titanium	FKM
H	HASTELLOY C22 or equivalent	EPDM
F		FKM

PVDF : Polyvinylidene fluoride
FKM　: Fluorine-contained rubber
EPDM : Ethylene propylene diene monomer

d : Special version

■Applicable pumps
This product is designed for use with the following pump models.
　EWN-B11/-B16/-B21/-B31/-C16/-C21/-C31/-C36 VC/VH Y

■Specifications

Electricity	Power voltage	24VDC±10%
	Consumption current	100mA (300mA at power-on)
	Sensor cable	DIN 5-pin shielded connector cable
	Start-up time	20 sec after power-on
Liquid conditions	Temperature range	0-40ºC (non-freezing, no viscosity/characteristic change)
	Required conductivity	1000mS/m or more
Operating conditions	Room temperature	0-40ºC
	Ambient humidity	30-90% (non-condensing)
	Storage temperature	-10 - 50ºC
Accuracy for the EFS-05 with the EWN-B11/-B16/-B21/-C16/-C21		±5%RD at or above 40ml/min
		±2ml/min below 40ml/min
Accuracy for the EFS-10 with the EWN-B31/-C31/-C36		±5%RD at or above 120ml/min
		±6ml/min below 120ml/min

■Applicable pumps
Plumbing precautions
1. Solution in the discharge line and the pump head may be under pressure. Release the pressure before mounting the EFS onto the pump head.
2. Foreign matters and a non-conductive liquid prevent the EFS from monitoring a flow rate. Be sure to remove these factors before mounting the EFS.
3. Fasten the EFS onto the outlet of the pump head to 3.43N•m.
4. Check O rings and sealing surfaces for damage or foreign matters when detecting a leak.
5. Always install the check valve together with the EFS. Purchase the CBN check valve if a line length is extended to 3m or longer.
6. When using the EFS-10 with the EWN-C36, 0.07MPa or higher back pressure should be loaded to the pump. Otherwise, correct measurement will not be obtained.

Wiring precautions
1. Be sure to power off the pump before connecting the DIN cable.
2. Do not pull the DIN cable.
3. Do not connect the DIN cable to the pump while wet with solution or water.

Operating precautions
1. The EFS does not work for 20 seconds after power-on. Avoid on-off operation by powering on/off the pump.
2. It takes about 30 minutes after the start of the pump for a dry EFS to get ready for measurement. An accurate flow can not be obtained during this time period (running-in period).
3. Malfunction may result. Do not close a strong magnet to the EFS or use in a magnetic field.
4. Rinse the flow path with tap water to clean electrode as necessary.
5. Use measures to keep the pump connections free from stress. Weight and thermal expansion/contraction of the piping can stress connection points.

■Warranty/Repair service
Scope
1. Warranty period: One year after delivery
2. Repair without charge: Any failed or damaged product occurred within the warranty period due to a design or constructional problem will be repaired without charge.
3. Repair with charge: Any repair of the failed or damaged product which falls under the following cases will be charged.
　a. The product is out of warranty period.
　b. Failure or damage is due to incorrect handling.
　c. Failure or damage is due to the use of any unauthorized part.
　d. Failure or damage is due to unauthorized repair or alterations.
　e. Failure or damage is due to act of providence such as earthquake or fire.
4. Wear part replacements are charged.
5. The materials we selected for the product are recommendable ones. It is not the manufacturer's responsibility for any chemical corrosion or wear.
6. It is not the manufacturer's responsibility for any property damage and related expenses due to product failure.

Repair
If you notice any abnormal conditions, stop operation and check/solve problems. Early inspection and corrective action will help prevent failure or injury.
1. Read through this instruction manual before request for repairs.
2. Contact us or your machine maker (when built-in application) for repair.
3. Flush the flow path with tap water before return.
4. Contact us for repair with the following information.
　a. Model code and Mfg. number: See nameplate.
　b. Operating period and conditions (liquid, concentration, temperature, slurry, piping layout or so)
　c. Failure detail.