User's Manual

Models AM012 Magnetic Flowmeter Calibrator

MANUAL AMENDMENT IM 1E6K2-10E

User's manual IM1E6K2-E (6th Edition) is amended for the calibration of AXFA11, AXFA14 and

AXF integral flowmeter.

Page	Contents
Page 2-1-1 2-1 Model Name and Specifications	Data plate description is changed
Page 3-1 3 GENERAL	ADMAG AXF Magnetic Flowmeter is added
Page 3-2-1, 3-2-2 3-1 Standard Specifications 3-2 Model and Suffix Codes 3-3 Options 3-4 Accessories	Junction box for ADMAG AXF (optional code / AXF) is added
Page 3-3-1 3-5 External Dimensions	Junction box for AXFA14 and AXF integral flowmeter is added
Page 4-1-1 4 Operation	Calibration Procedures for AXFA11, AXFA14 and AXF integral flowmeter are added
Page 4-19-1, 4-19-2, 4-19-3, 4-19-4 4-7 When AM012 is used with AXFA11	AXFA11 calibration is added
Page 4-19-5, 4-19-6, 4-19-7, 4-19-8, 4-19-9 4-8 When AM012 is used with AXFA14 or AXF integral Flowmeter	AXFA14 and AXF integral flowmeter calibration is added
Page 3-2-1, 3-2-2 3.1 Standard Specifications	Junction box for FOUNDATION Fieldbus Communication type is added
Page 3-2-2 3.2 Model and Suffix Codes 3.3 Options 3.4 Accessories	Junction box for FOUNDATION Fieldbus Communication type (optional code /FB) is added
Page 3-3-1 3.5 External Dimensions	Junction box for FOUNDATION Fieldbus Communication type is added
Page 4-19-10 to 4-14-16 4.9 When AM012 is used with FOUNDATION Fieldbus Communication type AXFA14 or AXF integral flowmeter	Calibration procedures for FOUNDATION Fieldbus Communication type AXFA14 or AXF integral flowmeter are added

YOKOGAWA

Yokogawa Electric Corporation

13th Nov. 2006 IM 1E6K2-10E 2nd Edition

2. HANDLING PRECAUTIONS AND REQUISITES

The Model AM012 Magnetic Flowmeter Calibrator is thoroughly tested at the factory before shipment. However, when the instrument is delivered, make a visual check to ascertain that no damage occurred during shipment.

This section describes important precautions and requisites to be observed when handling the instrument. Carefully read this manual before using the instrument.

If there are any problems or questions, please contact the nearest YOKOGAWA service center or the dealer from whom the instrument was purchased.

2.1 Model Name and Specifications

The Model name and main data are indicated on the name plate attached at the rear of the case (see Figure 2.1).



Figure 2.1 Data Plate

Verify that the data are the same as those specified at the time when it was ordered, referring to the Model and Suffix Codes in Section 3.2.

When contacting us, please indicate the Model and the instrument serial number.

2.2 Handling and Storing Precautions and Requisites

Precautions and requisites to be taken when handling and storing this instrument:

- (1) Prevent excessive shock to the instrument.
- (2) Protect the instrument from water and precipitation.
- (3) Calibrate the instrument at normal temperature and humidity.
- (4) Avoid installation or storage of the instrument in a corrosive atmosphere.

(5) Store the instrument in a location:

- free from water and precipitation.
- relatively free from vibration and shock.
- where the ambient temperature is between 0°C and 40°C and the humidity is between 5% and 80% relative humidity (well-ventilated and without condensation).

3. GENERAL

The AM012 Calibrator is a standard signal generator used to check or calibrate the ADMAG AXF Magnetic Flowmeter (AXFA11, AXFA14, AXF Integral Flowmeter), AM11 Magnetic Flow Converter, ADMAG AE Magnetic Flowmeter, ADMAG CA Magnetic Flowmeter, AM12 Magnetic Flow Converter, AM100A/B or AM200A/B Magnetic Flowmeter, YMA11 Magnetic Flow Converter and Compact YEWMAG Magnetic Flowmeter (CYM for short), styles A and B.(Style A or style B is indicated on the name plate: style A as *A and B as *B.)

The excitation load is incorporated in the calibrator, so the converter can be checked or calibrated without using a flow detector.

Span can be set from 0 to 10.99 m/s. The output signal related to the span can be set to 0, 25, 50, 75 and 100% using the output (%) knob.

3.1 Standard Specifications

	• AM012	
	Case	: Material : Unsaturated polyester resin
		Dimensions : 110mm (H)×235mm (W)×364mm (D)
		Color : Light grayish green
	Wiring cable	: Special cables supplied are:
		AM012 power cord, signal and excitation cables
		CYM signal cable and excitation cable (optional)
	Range setting	: 0 to 10.99 m/s (minimum scale 0.01 m/s) with the span-
		setting dial.
		CHECK, 0, 25, 50, 75, 100% with output (%) knob.
	Accuracy	: $\pm 0.04\%$ of set value (span 0.1 m/s or greater)
		+0.04 mm/s (span less than 0.1 m/s)
	Power supply requirements	: 90 to 132 V AC or 180 to 264 V AC, 47 to 63 Hz
	Ambient temperature limits	: 0 to 40°C
	Weight	: 4.2kg
	Power cord plug	: Three types of plugs are available (select any one of the
		following three):
		(-1) For 100 V AC (for domestic use)
		(-2) For 100 V AC (UL Standard)
		(-3) For 200 V AC (CEE Standard)
		7
000		
100 1	(2)	
(for c	domestic use)	(conforms to UL standard) (conforms to CEE standard)
	Figure 3.1 Power Cord Ph	105
	inguie J.i I Ower COlulin	* <u></u> _0

(-1)

Case	: Material : Stainless steel Dimensions : 140.5mm(H)×112.4mm(W)×112.4mm(D) Color : Light gray
Power supply requirements	: Power supply code -A1; Range 80 to 264V AC, 47 to 63Hz/100 to 130V DC,
	Power supply code -D1; Range 20.4 to 28.8 V DC (except /FB of ADMAG AE)
Ambient temperature limits Weight	: 0 to 40°C : 1kg
• Junction box for ADM	AG SE
Case	: Material : Stainless steel Dimensions : 140.5mm(H)×112.4mm(W)×112.4mm(D) Color : Light gray
Power supply requirements	: Power supply code -A1; Range 80 to 127 V AC, 47 to 63 Hz/90 to 110 V DC Power supply code -A2;
	Range 180 to 264 V AC
	Power supply code -D1; Pange 20.4 to 28.8 V DC/AC
Ambient temperature limits	: 0 to 40°C
Weight	: 1kg
• Junction box for AXFA	14 and AXF integral flowmeter
Case	: Material : Aluminum diecast
	Dimensions : 240mm(H)×180mm(W)×145.5mm(D) Color : Silver grav
Power supply requirements	: Power supply code 1;
	 AC specifications Rated power supply: 100 to 240 V AC, 50/60 Hz (Operating voltage range: 80 to 264 V AC) DC specifications
	Rated power supply: 100 to 120 V DC (Operating voltage range: 90 to 130 V DC)
	Power supply code 2; • AC specifications
	Rated power supply: 24 V AC, 50/60 Hz (Operating voltage range: 20.4 to 28.8 V AC)
	• DC specifications
	range: 20.4 to 28.8 V DC)
Ambient temperature limits	: 0 to 40°C
Weight	: 2.7kg
• Junction box for FOUNI integral flowmeter	DATION Fieldbus Communication type AXFA14 and AXF
Case	: Material : Aluminum diecast Dimensions : 197mm(H)×180mm(W)×145.5mm(D) Color : Silver grav
Power supply requirements	 Power supply code 1; AC specifications Rated power supply: 100 to 240 V AC, 50/60 Hz (Operating voltage range: 80 to 264 V AC) DC specifications Rated power supply: 100 to 120 V DC (Operating voltage range: 90 to 130 V DC) Power supply code 2;

• Junction box for ADMAG AE and ADMAG CA

		• AC specifications
		Rated power supply: 24 V AC, 50/60 Hz (Operating
		voltage range: 20.4 to 28.8 V AC)
		• DC specifications
		Rated power supply: 24 V DC (Operating voltage
		range: 20.4 to 28.8 V DC)
Ambient temperature limits	:	0 to 40° C
Weight	:	2.7kg

3.2 Model and Suffix Codes

Model	Suffix Code		Description
AM012			Magnetic flowmeter calibrator
Power code	-1 -2		100 V version (Type JIS plug) 100 V version (Type UL plug) 200 V version (Type CEE plug)
Style code	*A		Style A
Options	-	/CYM /AE /SE /AXF /FB	With cable for CYM With junction box for AE and CA With junction box for SE With junction box for AXFA14 and AXF integral Flowmeter With junction box for FOUNDATION Fieldbus Communication type AXFA14 and AXF integral Flowmeter

3.3 Options

CYM cables : Signal and excitation cables for CYMs (option code CYM) are available optionally to calibrate the Compact YEWMAG.

Junction box for ADMAG AE and ADMAG CA:

Junction box are available optionally to calibrate the ADMAG AE and ADMAG CA.

Junction box for ADMAG SE:

Junction box are available optionally to calibrate the ADMAG SE.

Junction box for ADMAG AXF:

Junction box are available optionally to calibrate the AXFA14 and AXF integral flowmeter.

Junction box for FOUNDATION Fieldbus Communication type ADMAG AXF: Junction box are available optionally to calibrate the FOUNDATION Fieldbus Communication type AXFA14 and AXF integral flowmeter.

3.4 Accessories

- One power supply cord (types of plugs vary depending on MS code.)
- One fuse (0.2 A)
- One signal cable
- One excitation cable
- Cable for CYM (When /CYM is selected)
 - The cables and a fuse are stored in a cord container on the rear panel. To open the container cover, pull the container cover knob forward.
- Junction box (When /AE, /SE, /AXF or /FB is selected)
- Special cable for ADMAG SE (When /SE is selected)

3.5 External Dimensions

•AM012

unit : mm(approx,inch)



•Junction box (for AE & CA)

Junction box (for SE)



•Junction box (for AXFA14 and AXF integral flowmeter)







3.6 Component Identification



Figure 3.6 Component Identification

4. OPERATION

This chapter describes calibration procedures when the AM012 calibrator is used with: AM11(in Section 4.1), ADMAG AE, ADMAG CA(in Section 4.2), ADMAG SE(in Section 4.3), AM12, AM100A/B, AM200A/B(in Section 4.4), YMA11(in Section 4.5), Compact YEWMAG (CYM)(in Section 4.6), AXFA11(in Section 4.7), AXFA14 and AXF integral flowmeter(in Section 4.8).

Refer to each section to perform the desired calibration.



- As a rule, calibration of the converter should be implemented in a maintenance service shop where the necessary tools are provided.
- The amplifier unit contains sensitive parts that may be damaged by static electricity. Excercise care so as not to directly touch the electronic parts or circuit patterns on the board, for example, by preventing static electrification by using grounded wrist straps when handing the unit. Also take precautions such as placing a removed amplifier unit into a bag with an antistatic coating.

4.1 When AM012 is used with AM11

4.1.1 Interconnections



Figure 4.1.1 Interconnection Diagram

4.7 When AM012 is used with AXFA11

4.7.1 Interconnections



Figure 4.7.1 Interconnection Diagram

4.7.2 Checking Procedures

(1) Standard dual frequency excitation

↓	Confirm the AM012 FUNCTION switch to the "ADMAG" position.
Chang	ge the AXFA11 set values.
	 Set the "C30 Select Flow Tube" to "Calibrator" Set the "C20 Measure Mode" to "Standard DF". (Before changing the mode, write dow the previous value) Set both the "C21 Low MF" and "C22 High MF" meter factors to 1.0000. (Before changing t meter factors, write down the previous values.) See Section 4.7.3, "Meter Factor Setting."
Turn t	he AXFA11 power ON.
¥.	Two excitation lamps will flash alternately. (See Note 1 below) After turning ON the power, let the instrument warm up for at least three minutes.
Span	set on the AM012.
	Set the flow velocity of the span with the AM012 span dial. Firstly, be sure to confirm that the "Nominal Size Unit" parameter of AXFA11 is set to "mm". The flow velocity(m/s) can be checkwith "C44 Velocity Check" parameter of AXFA11.
Check	the zero point.
	Set the output (%) knob to 0% to check the zero point. To check the span accurately, record the indicated value. (See Note 2 below)
Check	the span and output accuracy.
Ļ	Turn the output (%) knob to 25%, 50%, 75% and 100% in turn to check the indicated values. (Subtract the zero point value from the indicated value to check the output accuracy.) When the knob is set to CHECK, common mode noise rejection can be checked (See Note 3 below).
Return	n the AXFA11 set values to their initial values.
•	 Return the C30 Select Flow Tube to "ADMAG AXF" Return the "C20 Measure Mode" to the initial value which was previously recorded. Return both the "C21 Low MF" and "C22 High MF" meter factors to their initial values which were previously recorded.
Turn t	he AXFA11 power OFF.
¥	
Remo	ve the power supply and ground cords from the AM012.
¥	
Remo	ve the signal and excitation cables from the AM012.
+	
Conne	ect the AXFA11 signal and excitation cables
+	
End	
lote 1 : 1 lote 2 : 1	If no exciting current flows, the two excitation lamps do not flash correctly. When the zero readjustment is available (i.e. the flowtube has been filled with fluid and the fluid velocity is completely zero) after checking of AXFA11, it is convenient to carry out zero adjustm

- In case that zero readjustment is not available, do not carry out zero adjustment of AXFA11.
- Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.

(2) Enhanced dual frequency excitation

When the AXFA11 is used in combination with the AXF flowtube which supports the enhanced dual frequency excitation (optional code HF1 or HF2), the calibration of that excitation is necessary.

Confirm AM012 FUNCTION.
Confirm the AM012 FUNCTION switch to the "ADMAG" position.
Change the AXFA11 set values.
 Set the "C30 Select Flow Tube" to "Calibrator" Set the "C20 Measure Mode" to "Enhanced DF". (Before changing the mode, write down the previous value) Set both the "C23 Low MF (EDF)" and "C24 High MF (EDF)" meter factors to 1.0000. (Before changing the meter factors, write down the previous values.) See Section 4.7.3, "Meter Factor Setting."
Turn the AXFA11 power ON.
Two excitation lamps will flash alternately. (See Note 1 below) After turning ON the power, let the instrument warm up for at least three minutes.
Span set on the AM012.
Set the flow velocity of the span with the AM012 span dial. Firstly, be sure to confirm that the "C3 Nominal Size Unit" parameter of AXFA11 is set to "mm". The flow velocity(m/s) can be checked with "C44 Velocity Check" parameter of AXFA11.
Check the zero point.
Set the output (%) knob to 0% to check the zero point. To check the span accurately, record the indicated value. (See Note 2 below)
Check the span and output accuracy.
Turn the output (%) knob to 25%, 50%, 75% and 100% in turn to check the indicated values. (Subtract the zero point value from the indicated value to check the output accuracy.) When the knob is set to CHECK, common mode noise rejection can be checked (See Note 3 below).
Return the AXFA11 set values to their initial values.
 Return the C30 Select Flow Tube to "ADMAG AXF" Return the "C20 Measure Mode" to the initial value which was previously recorded. Return both the "C23 Low MF (EDF)" and "C24 High MF (EDF)" meter factors to their initial values which were previously recorded.
Turn the AXFA11 power OFF.
Remove the power supply and ground cords from the AM012.
¥
Remove the signal and excitation cables from the AM012.
Connect the AXFA11 signal and excitation cables
End
 Note 1 : If no exciting current flows, the two excitation lamps do not flash correctly. Note 2 : When the zero readjustment is available (i.e. the flowtube has been filled with fluid and the fluid velocity is completely zero) after checking of AXFA11, it is convenient to carry out zero adjustment instead of subtraction the zero point value. In case that zero readjustment is not available, do not carry out zero adjustment of AXFA11.

Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.

4.7.3 Meter Factor Setting

The meter factors can be set using three AXFA11 converter keys or HHT.

The standard dual frequency excitation requires two meter factors such as "C21 Low MF" and "C22 High MF". In case of calibration, two meter factors set to 1.0000.

The enhanced dual frequency excitation requires two meter factors such as "C23 Low MF (EDF)" and "C24 High MF (EDF)". In case of calibration, two meter foctors set to 1.0000.

For details, refer to the AXFA11 User's Manual IM 01E20C01-01E.

4.8 When AM012 is used with AXFA14 or AXF integral flowmeter

When using the AM012 calibrator with the AXFA14 or AXF integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration. If /AXF is selected for the optional specifications, this junction box is provided. The junction box can also be obtained separately. (Part No : F9559DJ)

4.8.1 Interconnections





• How to remove the amplifier unit (AXFA14 and AXF integral flowmeter are same procedure). See IM 01E20D01-01E regarding the procedure of removing amplifier unit.

- (1) Turn off the power.
- (2) Loosen cover locking screw, and remove the cover.
- (3) Remove wiring connectors 1 and 2 (refer to Figure 4.8.2) from the amplifier unit. Remove them carefully, without applying excessive force.
- (4) Loosen the three mounting screws while holding the unit with your hand.
- (5) Pull the unit straight out.



Place the amplifier unit in the junction box.

- Only the amplifier is housed in the junction box.
 - (1) Insert the connector pins of the amplifier into the two connectors on the terminal board of the junction box, aligning the holes of the plate with the positioning pins as shown in the figure.
 - (2) Engage the connectors to the amplifier. (See Figure 4.8.3.)
 - (3) After checking that the connections are secure, firmly tighten the fixing three screws. (4) Screw in the cover firmly as shown in Figure 4.8.3 where general-purpose use and
 - sanitary type is shown. In case of explosion proof type, use the cover of 10mm thickness into amplifier unit side.









GLASS:3mm

Figure 4.8.3 Setting Converter Unit in Junction Box

Proceed to 4.8.2 Checking Procedure.

4.8.2 Checking Procedure

(1) Standard dual frequency excitation



In case that zero readjustment is not available, do not carry out zero adjustment of AXFA14 or AXF integral flowmeter.

Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.

(2) Enhanced dual frequency excitation

When the AXFA14 is used in combination with the AXF flowtube which supports the enhanced dual frequency excitation (optional code HF1 or HF2), the calibration of that excitation is necessary.

In case of AXF integral flowmeter which supports the enhanced dual frequency excitation (optional code HF1 or HF2), the calibration of that excitation is necessary.

Change Function.
Slide the AM012 FUNCTION switch to the ADMAG posiotion.
Turn on the Junction box power.
Two excitation lamps will flash alternately at regular intervals. (See Note 1 below) After turning on the power, let the instrument warm up for at least three minutes.
Span setting
Set the flow velocity of the span with the AM012 span dial. Firstly, be sure to confirm that the "C31 Nominal Size Unit" parameter of converter is set to "mm". The flow velocity can be checked with "C44 Velocity Check" parameter of the converter.
Changing the setting of AXF AMPLIFIER UNIT
 Set the "C20 Measure Mode" to "Enhanced DF". (Before changing the mode, write down the previous value) Set the meter factors of "C23 Low MF (EDF)" and "C24 High MF (EDF)" to 1.0000. (Before changing the settings, record the previous values.)
Check the zero point
Turn the output knob of AM012 to 0% to check the zero point. To check the span accurately, record the indicated value. (See Note 2 below)
Check the span and output accuracy
Turn the output knob to 25%, 50%, 75% and 100% in turn and check the indicated values. (Subtract the zero point value from the indicated value to check the output accuracy.) Set the knob to CHECK to check the common mode noise rejection. (See Note 3 below)
Return the ADMAG AXF AMPLIFIER UNIT set values to their initial values.
 Return the "C20 Measure Mode" to the initial value which was previously recorded. Return the two meter factors of "C23 Low MF (EDF)" and "C24 High MF (EDF)" to the value recorded before the change.
Turn off the Junction box power.
Remove the power supply and ground cables from the AM012.
Remove the signal and excitation cables from the AM012
Remove the amplifier unit from the Junction box .
Loosen the fixing screws, disengage the connectors, then remove the amplifier unit.
Install the amplifier into the converter.
 (1) To install the amplifier assembly, follow the procedures used to remove it in the reverse order. (Refer to Figure 4.8.2) (2) Replace the unit by pushing it in, taking care not to damage the amplifier mounting connectors on the circuit board. (3) Carefully connect wiring connectors 1 and 2 to the amplifier unit, making sure that the connectors' directions are correct. Let wiring connector 2 pass along the amplifier side of the rod. (4) Tighten the three mounting screws while holding the unit with your hand. (5) Screw in the cover, taking care not to entangle the cables of the wiring connectors. (6) Tighten cover locking screw.
End
Note 1 : If no exciting current flows, the two excitation lamps do not flash correctly. Note 2 : When the zero readjustment is available (i.e. the flowtube has been filled with fluid and the fluid velocity

e 2 : When the zero readjustment is available (i.e. the flowtube has been filled with fluid and the fluid velocity is completely zero) after checking of AXFA14 or AXF integral flowmeter, it is convenient to carry out zero adjustment instead of subtraction the zero point value.

In case that zero readjustment is not available, do not carry out zero adjustment of AXFA14 or AXF integral flowmeter.

Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.

4.8.3 Meter Factor Setting

The meter factors can be set using three keys of AXFA14 converter or AXF integral flowmeter, or using HHT (Handheld terminal).

The standard dual frequency excitation requires two meter factors such as "C21 Low MF" and "C22 High MF". In case of calibration, two meter factors set to 1.0000.

The enhanced dual frequency excitation requires two meter factors such as "C23 Low MF (EDF)" and "C24 High MF (EDF)". In case of calibration, two meter factors set to 1.0000.

For details, refer to the AXFA14 User's Manual IM 01E20C02-01E and AXF Integral Flowmeter User's Manual IM 01E20D01-01E.

4.9 When AM012 is used with FOUNDATION Fieldbus Communication type AXFA14 or AXF integral flowmeter

When using the AM012 calibrator with the FOUNDATION Fieldbus Communication type AXFA14 or AXF integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration. If /FB is selected for the optional specifications, this junction box is provided. The junction box can also be obtained separately. (Part No : F9559DH)

4.9.1 Interconnections



Remove the amplifier unit from the converter.

 How to remove the amplifier unit (AXFA14 and AXF integral flowmeter are same procedure). See IM 01E20F02-01E regarding the procedure of removing amplifier unit.

AXF integral flowmeter

- (1) Turn off the power
- (2) Remove the cover Loosen cover locking screw 1 clockwise using a hexagonal wrench (nominal size 3) to unlock the cover. (Upon shipment from the manufacturing plant, the cover is locked.) Hold the flowmeter with your hand and remove the cover by turning it in the direction of the arrow as shown below.



Figure 4.9.2 Removing the Display Cover

- (3) Remove wiring connectors 1 and 2 (for exact connector locations, please refer to IM01E20D01-01E Chapter 5 Figure 5.4.6) from the amplifier assembly. Remove them carefully, without applying excessive force.
- (4) Detach a lead wire fastener from the rods to be able to see mounting screws.(Figure 4.9.3)



Figure 4.9.3 Detach a Lead Wire Fastener

- (5) Loosen the three mounting screws while holding the assembly with your hand (refer to IM01E20D01-01E Figure 5.4.6).
- (6) Pull the assembly straight out.
- (7) Remove the wiring connector31. (Figure 4.9.4)



Figure 4.9.4 Remove the Wiring Connector 31



- (1) Turn off the power
- (2) Remove the cover referring to integral flowmeter explanation in item (2).
- (3) Remove wiring connectors 1 and 2 (for exact connector locations, please refer to IM01E20C02-01E Figure 11.1.6) from the amplifier assembly. Remove them carefully, without applying excessive force.
- (4) Pulling up wire together with connector 1 and two lead wire fasteners be moved along the rods upwards letting two fasteners close by together.
- (5) Detach two lead wire fasteners from the rods to be able to see mounting screws. (Figure 4.9.5)



Figure 4.9.5 Detach Two Lead Wire Fasteners

- (6) Loosen the three mounting screws while holding the assembly with your hand.(7) Pull the assembly straight out.
- (8) Remove wiring connector31.(Figure 4.9.6)



Figure 4.9.6 Remove the Wiring Connector 31

To next page



4.9.2 Checking Procedure

(1) Standard dual frequency excitation





In case that zero readjustment is not available, do not carry out zero adjustment of AXFA14 or AXF integral flowmeter.

- Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012
- Note 4 : In case of parameter change via the Host, set the MODE_BLK of each parameter to O/S mode before the change. (Refer to IM 01E20F02-01E page A-2.)

- (1) To replace the amplifier assembly, follow the procedures used to remove it in the
- (2) Connect wiring connector31. (Figure 4.9.6) (3) Replace the assembly by pushing it in,
- taking care not to damage the amplifier mounting connectors on the circuit board (refer to IM01E20C02-01E Figure 11.1.6)
- (4) Tighten the three mounting screws while holding the assembly with your hand.
- (5) Attach two lead wire fasteners to the rods.(Figure 4.9.5)
- (6) Push a bottom side lead wire fastener deeper along the rods using e.g. driver tip. The position of the upper fastener be within 0 to 10mm from the rim of aluminum converter case.(refer to Figure
- (7) Carefully connect wiring connectors 1 and 2 to the amplifier assembly, making sure that the connectors' directions are correct. Let wiring connector 2 pass along the amplifier side of the rod.(refer to IM01E20C02-01E Figure 10.1.6)
- (8) Replace the cover, taking care not to entangle the cables of the wiring
 - In installing the cover refer to integral flowmeter explanation in item (7).

(2) Enhanced dual frequency excitation

When the AXFA14 is used in combination with the AXF flowtube which supports the enhanced dual frequency excitation (optional code HF1 or HF2), the calibration of that excitation is necessary.

In case of AXF integral flowmeter which supports the enhanced dual frequency excitation (optional code HF1 or HF2), the calibration of that excitation is necessary.

Change Function.
Slide the AM012 FUNCTION switch to the ADMAG posiotion.
Turn on the Junction box power.
Two excitation lamps will flash alternately at regular intervals. (See Note 1 below) After turning on the power, let the instrument warm up for at least three minutes.
Span setting
Set the flow velocity of the span with the AM012 span dial. Firstly, be sure to confirm that the "NOMINAL_SIZE_UNIT" parameter of TR Block is set to "mm". The flow velocity can be checked with "VELOCITY_CHECK" parameter of the TR Block of the converter.
Changing the setting of AXF AMPLIFIER UNIT
 Set the "MEASURE_MODE" parameter of TR Block to "Enhanced DF". (Before changing the mode, write down the previous value) Set the meter factors of "LOW_MF (EDF)" and "HIGH_MF (EDF)" parameters of TR Block to 1.0000. (Before changing the settings, record the previous values.)
Check the zero point
Turn the output knob of AM012 to 0% to check the zero point. To check the span accurately, record the indicated value. (See Note 2 below)
Check the span and output accuracy
Turn the output knob to 25%, 50%, 75% and 100% in turn and check the indicated values by confirming "OUT" parameter of AI Block. (Subtract the zero point value from the indicated value to check the output accuracy.) Set the knob to CHECK to check the common mode noise rejection. (See Note 3 below)
Return the ADMAG AXF AMPLIFIER UNIT set values to their initial values.
 Return the "MEASURE_MODE" parameter of TR Block to the initial value which was previously recorded. Return the two meter factors of "LOW_MF" and "HIGH_MF" parameters of TR Block to the value recorded before the change.
Turn off the Junction box power.
Disconnect from the Host
* Remove the power supply and ground cables from the AM012
Remove the signal and excitation cables from the AM012.
Remove the amplifier unit from the Junction box .
Loosen the fixing screws, disengage the connectors, then remove the amplifier unit.
Install the amplifier into the converter.
Refer to the explanation of "Install the amplifier into the converter" in 4.9.2 (1).
 Note 1 : If no exciting current flows, the two excitation lamps do not flash correctly. Note 2 : When the zero readjustment is available (i.e. the flowtube has been filled with fluid and the fluid velocity is completely zero) after checking of AXFA14 or AXF integral flowmeter, it is convenient to carry out zero adjustment instead of subtraction the zero point value. In case that zero readjustment is not available, do not carry out zero adjustment of AXFA14 or AXF integral flowmeter.

- Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.
- Note 4 : In case of parameter change via the Host, set the MODE_BLK of each parameter to O/S mode before the change. (Refer to IM 01E20F02-01E page A-2.)

4.9.3 Meter Factor Setting

The meter factors can be set via the Host.

The standard dual frequency excitation requires two meter factors such as "LOW_MF" and "HIGH_MF" parameters of TR Block. In case of calibration, two meter factors set to 1.0000.

The enhanced dual frequency excitation requires two meter factors such as "LOW_MF (EDF)" and "HIGH_MF (EDF)" parameters of TR Block. In case of calibration, two meter factors should be set to 1.0000.

For details, refer to ADMAG AXF Series FOUNDATION Fieldbus Communication type Magnetic Flowmeter User's Manual IM 01E20F02-01E.