User's Manual

AM012
Calibrator for Magnetic Flowmeter

Manual Change No.17-0047-E

Change the corresponding pages of the user's manual IM 1E6K2-E (6th Edition) to the contents below.

Page	Revised Item	
2-1	2.1	Changed the descriptions about name plate.
	2.2	Changed the description about storage location. Added the description about accessories.
3-1	3.	Changed the description.
	3.1	Changed the description.
3-2	3.2	Added the note.
	3.4	Deleted the fuse.
3-3	3.5	Added the figure about junction box.
4-1	4.	Added the IMPORTANT.
4-2	4.1.2	Added the note.
4-20	4.7	Added the connection of AXFA11 remote converter.
4-21	4.8	Added the connection of AXFA14 remote converter and AXF integral flowmeter.
4-22	4.9	Added the connection of AXFA14 remote converter and AXF integral flowmeter (Fieldbus).
4-23	4.10	Added the connection of AXR integral flowmeter.
4-24	4.11	Added the connection of AXG4A and AXW4A remote converter, or AXG and AXW integral flowmeter.

YOKOGAWA
Yokogawa Electric Corporation

Oct. 31, 2017

2. HANDLING PRECAUTIONS AND REQUISITES

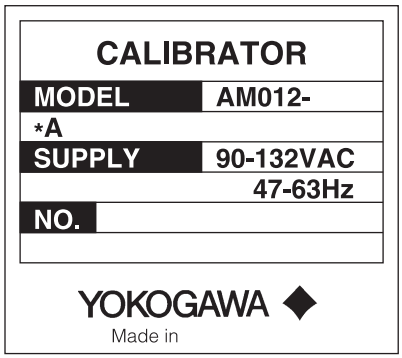
The AM012 Magnetic Flowmeter Calibrator is thoroughly tested at the factory before shipment. However, when the instrument is delivered, make a visual check to ascertain that no damage occurred during shipment.

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 specification code are indicated on the name plate attached at the rear of the case (see Figure 2.1).



180 — 264V AC at 200V series

Figure 2.1 Name Plate

Verify that the data are the same as those specified at the time when it was ordered, referring to the model name and specification 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) Select a storage location that fulfills the following conditions:

- A place where it will not be exposed to rain or water
- A place subject to minimal vibrations or shocks
- Temperature and humidity levels should be as follows:

  Temperature: 0 to 40°C

  Humidity: 5 to 80% RH (no condensation)

  The preferred ambient temperature and humidity levels are 25°C and approximately 65% RH.

(6) Do not use the instrument and the accessories (power cable etc.) for other purposes.

3. GENERAL

AM012 is a signal generator used to check the calibration and operation of YOKOGAWA's magnetic flowmeter.

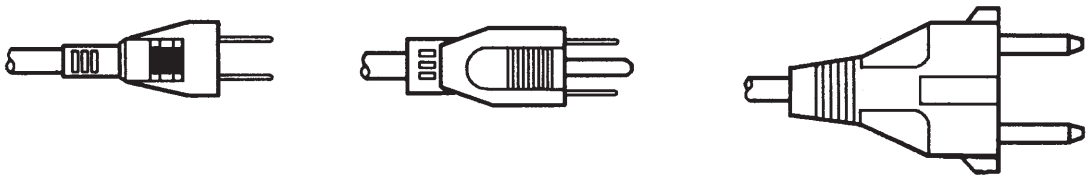
As the excitation load is built-in, the calibration and operation of a converter can be checked without a detector.

Span can be set within the range of flow rates 0 to 10.99 m/s. Output signal corresponding to setting span can be set to 0, 25, 50, 75, 100% with the output (%) knob.

3.1 Standard Specifications

- **AM012**

Case	: Material	: Unsaturated polyester resin
	Dimensions	: 110mm (H)×235mm (W)×364mm (D)
	Color	: Light grayish green
Connecting Cable	: Power cable for AM012, Signal cable, Excitation cable	
	Signal cable, Excitation cable for optional code CYM (When optional code CYM is selected.)	
Setting Ranges	: 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	: ±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	: 90 to 132 V AC or 180 to 264 V AC, 47 to 63 Hz	
Ambient Temperature	: 0 to 40°C	
Weight	: 4.2kg	
Power plug	: The cable plugs vary depending on the specification.	



100 V AC (JIS plug) | 100 V AC (UL plug) | 200 V AC (CEE plug)

Figure 3.1 Power Plugs

- **Junction box for ADMAG CA and ADMAG AE**

Case	: Material	: Stainless steel
	Dimensions	: 140.5mm(H)×112.4mm(W)×112.4mm(D)
	Color	: Light gray
Power Supply	: 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	
Ambient Temperature	: 0 to 40°C	
Weight	: 1kg	

- **Junction box for ADMAG SE**

Case : Material : Stainless steel
Dimensions : 140.5mm(H)×112.4mm(W)×112.4mm(D)
Color : Light gray

Power Supply : 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;
Range 20.4 to 28.8 V DC/AC

Ambient Temperature : 0 to 40°C

Weight : 1kg

3.2 Model and Suffix Codes

Model	Suffix Code	Description
AM012	.....	Calibrator for Magnetic Flowmeter
Power Cable	**-1** ..... **-2** ..... **-3**	100 V AC (JIS plug) 100 V AC (UL plug) 200 V AC (CEE plug)
Style Code	***A**.....	Style A
Optional Specification	**/CYM** **/AE** **/SE**	Cable for CompactYEWMAG Junction box for ADMAG CA and ADMAG AE Junction box and special cable for ADMAG SE

Note: When using the AM012 calibrator with the AXG, AXW, CA, AXR, AXF, AE, SE integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration. If junction box is necessary for CA, AE, or SE, select the optional code AE or SE.
If junction box is necessary for AXG, AXW, AXR, AXF integral flowmeter, contact the nearest YOKOGAWA office.

3.3 Options

Cable for CompactYEWMAG:
Signal and excitation cables for CompactYEWMAG are available optionally to calibrate the CompactYEWMAG.

Junction box for ADMAG CA and ADMAG AE:
Junction box is available optionally to calibrate the ADMAG CA and ADMAG AE.

Junction box and special cable for ADMAG SE:
Junction box and cable are available optionally to calibrate the ADMAG SE.

3.4 Accessories

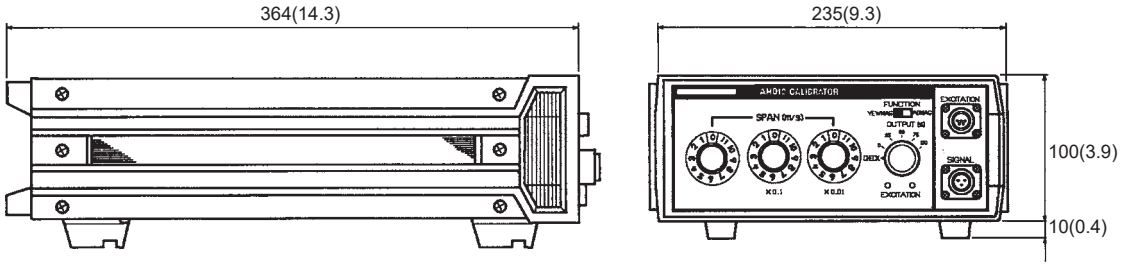
- One power cable (The cable plugs vary depending on the specification.)
- One signal cable (Terminal: M4 screw type)
- One signal cable (Terminal: Clamp type)
- One excitation cable (Terminal: M4 screw type)
- One excitation cable (Terminal: Clamp type)

The cables are stored in a container on the rear panel. To open the container cover, pull the container cover knob forward.

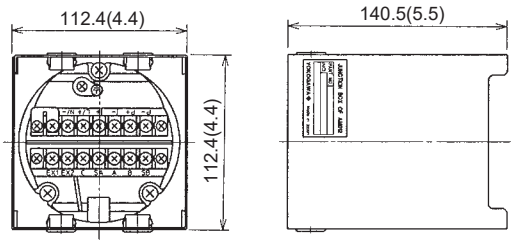
3.5 External Dimensions

- **AM012**

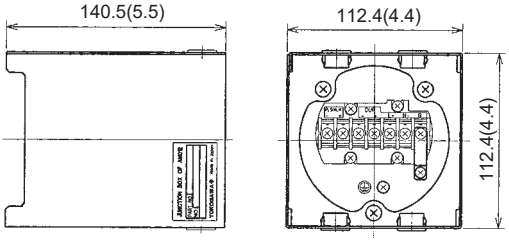
unit: mm (approx. inch)



- **Junction box (for CA and AE)**



- **Junction box (for SE)**



3.6 Component Identification

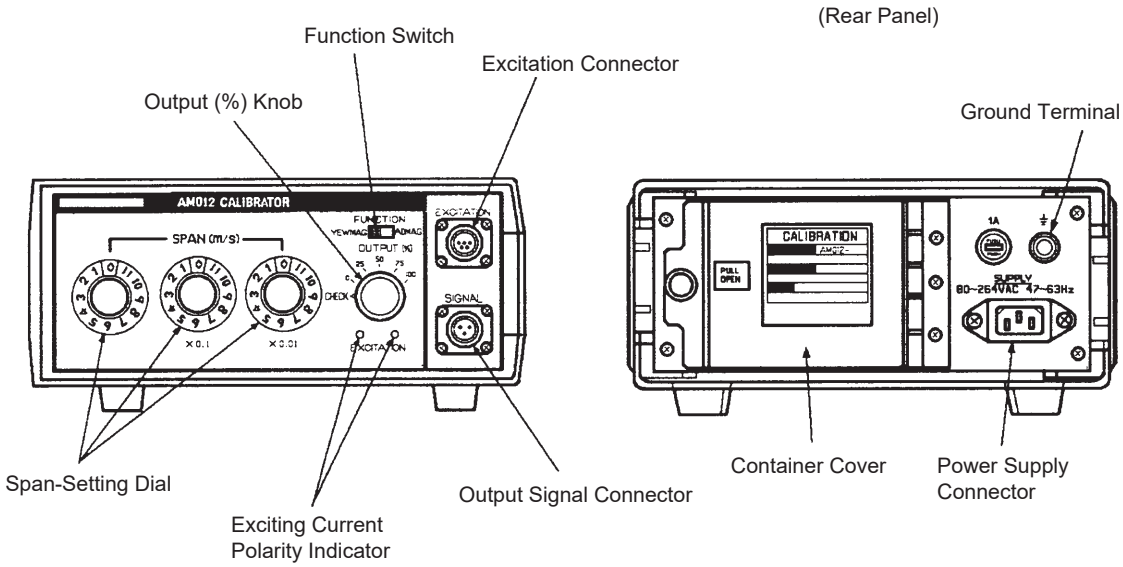


Figure 3.6 Component Identification

4. OPERATION

This chapter describes calibration procedures when the AM012 calibrator is used.

Read each section to perform the desired calibration.

IMPORTANT

- 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

Turn the AM11 power OFF.

↓

Disconnect the signal and excitation wirings for the AM11.

↓

Connect the signal and excitation cables to the AM012.

See Figure 4.1.1 for details of the connection.

↓

Connect the power and ground cables to the AM012.

Connect the power cable to the AM012.
Ground the terminal of the AM012 to protect it from external noise.
After turning the power on, let the instrument warm up for at least ten minutes.

↓

Proceed to 4.1.2 Checking Procedure.

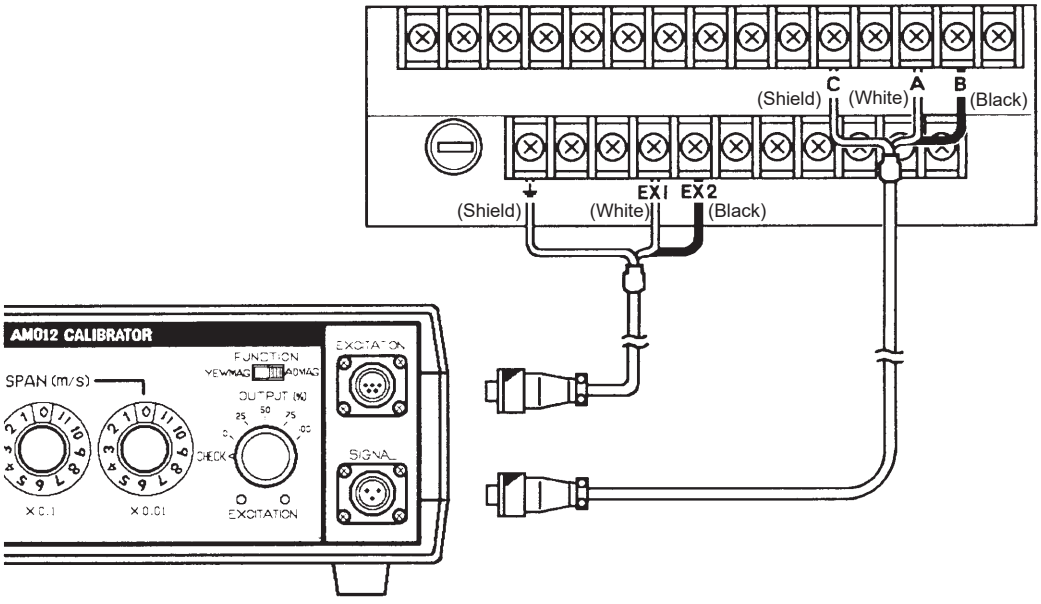
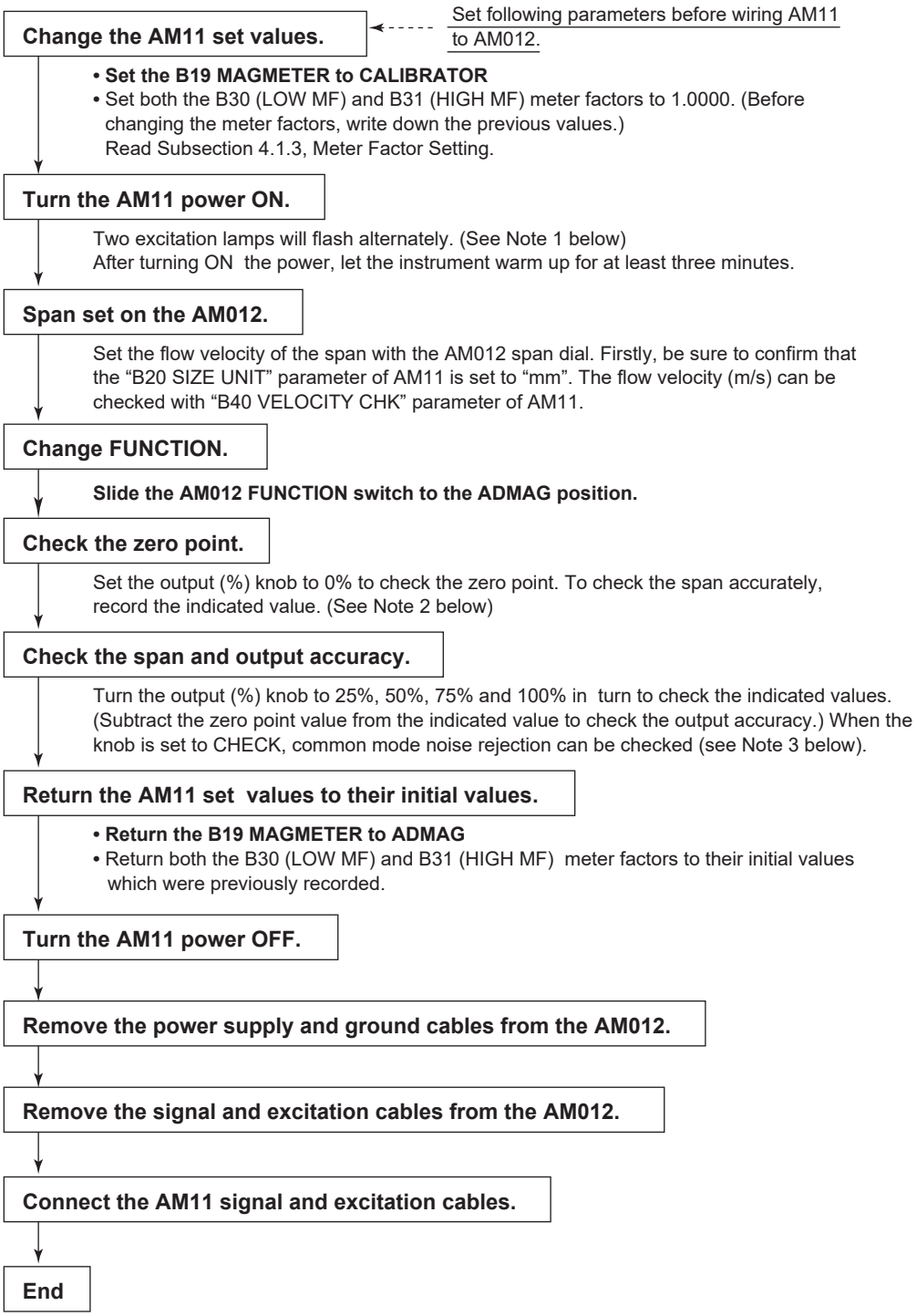


Figure 4.1.1 Interconnection Diagram

4.1.2 Checking Procedures



Note 1 : If no exciting current flows, the two excitation lamps do not flash correctly.
Note 2 : When the flowmeter is completely filled with liquid that is at a standstill, make an automotic ADMAG zero adjustment. If stopping the liquid flow is not possible, do not make an automatic ADMAG zero adjustment.
Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.

4.7 When AM012 is used with AXFA11 remote converter

This section describes the case of using the AM012 calibrator with the AXFA11 remote converter.

4.7.1 Interconnections

Turn the AXFA11 power OFF.

↓

Disconnect the signal and excitation wirings for the AXFA11.

↓

Connect the signal and excitation cables to the AM012.

See Figure 4.7.1 for details of the connection.

↓

Change AM012 FUNCTION.

Slide the AM012 FUNCTION switch to the ADMAG position.

↓

Connect the power and ground cables to the AM012.

Connect the power cable to the AM012.
Ground the terminal of the AM012 to protect it from external noise.
After turning the power on, let the instrument warm up for at least ten minutes.

↓

Proceed to 4.7.2 Checking Procedure.

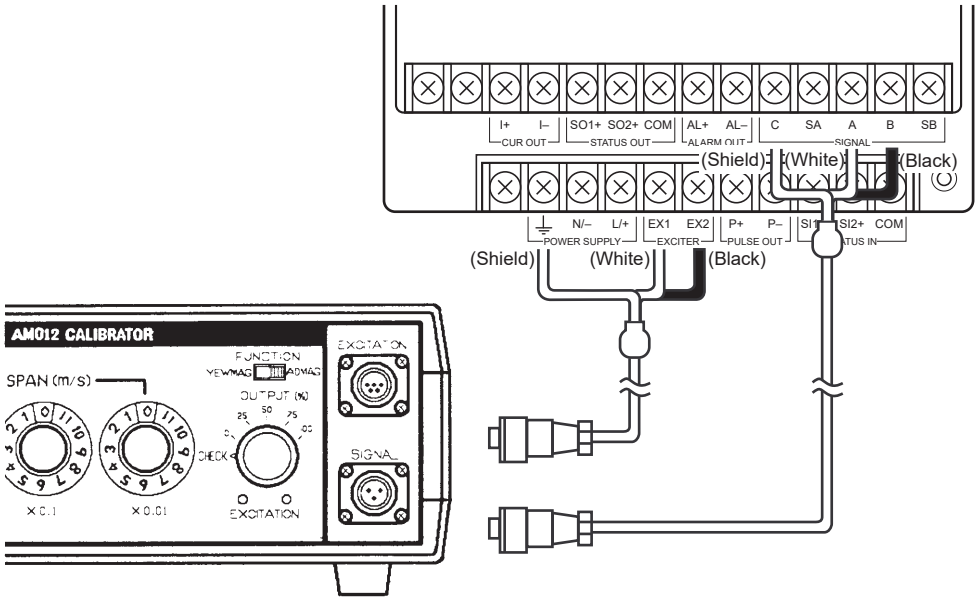


Figure 4.7.1 Interconnection Diagram

4.7.2 Checking Procedures

(1) Standard dual frequency excitation

Confirm AM012 FUNCTION.

Confirm the AM012 FUNCTION switch to the "ADMAG" position.

Change the AXFA11 set values. ← Set following parameters before wiring AXFA11 to AM012.

- **Set the "C30 Select Flow Tube" to "Calibrator"**
- **Set the "C20 Measure Mode" to "Standard DF".** (Before changing the mode, write down the previous value)
- Set both the "C21 Low MF" and "C22 High MF" meter factors to 1.0000.
  (Before changing the meter factors, write down the previous values.)
  Read Subsection 4.7.3, "Meter Factor Setting."

Turn the AXFA11 power ON.

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 set on the AM012.

Set the flow velocity of the span with the AM012 span setting dial. Firstly, be sure to confirm that the "C31 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)
Connect AM012 and AXFA11, and perform the zero adjustment. When zero adjustment is performed with AM012 connected, connect the converter to the detector, zero adjustment of the converter is necessary again. (See Note 4 below)

Check the span and output accuracy.

Turn the output (%) knob to 25%, 50%, 75% and 100% in turn to check the indicated values. After setting the value, let the AM012 stabilize at least a minute. (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 "C21 Low MF" and "C22 High MF" meter factors to their initial values which were previously recorded.
- Return the "C31 Nominal size Unit" to the initial value.

Turn the AXFA11 power OFF.

Remove the power supply and ground cables 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.
Note 4 : If the fluid can not be returned to a full water state or stopped state and zero adjustment can not be performed again under operating conditions, check the zero point value of AXFA11 beforehand and subtract the zero point value of AXFA11 from the output value.

(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 following parameters before wiring AXFA11 to AM012.

- **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.) Read Subsection 4.7.3, "Meter Factor Setting."

Turn the AXFA11 power ON.

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 set on the AM012.

Set the flow velocity of the span with the AM012 span setting dial. Firstly, be sure to confirm that the "C31 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)
Connect AM012 and AXFA11, and perform the zero adjustment. When zero adjustment is performed with AM012 connected, connect the converter to the detector, zero adjustment of the converter is necessary again. (See Note 4 below)

Check the span and output accuracy.

Turn the output (%) knob to 25%, 50%, 75% and 100% in turn to check the indicated values. After setting the value, let the AM012 stabilize at least a minute. (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.
- Return the "C31 Nominal size Unit" to the initial value.

Turn the AXFA11 power OFF.

Remove the power supply and ground cables 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.
Note 4 : If the fluid can not be returned to a full water state or stopped state and zero adjustment can not be performed again under operating conditions, check the zero point value of AXFA11 beforehand and subtract the zero point value of AXFA11 from the output value.

4.7.3 Meter Factor Setting

The meter factors can be set using three keys of AXFA11 converter, or using HHT (Hand-held 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 foctors set to 1.0000.

For details, read the AXFA11 Remote Converter User’s Manual IM 01E20C01-01E.

4.8 When AM012 is used with AXFA14 remote converter or AXF integral flowmeter

This section describes the case of using the AM012 calibrator with the AXFA14 remote converter.

When using the AM012 calibrator with the AXF integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration.

If junction box is necessary, contact the nearest YOKOGAWA office.

4.8.1 Interconnections

Turn the AXFA14 power OFF.

Disconnect the signal and excitation wirings for the AXFA14.

Connect the signal and excitation cables to the AM012.

See Figure 4.8.1 for details of the connection.

Change AM012 FUNCTION.

Slide the AM012 FUNCTION switch to the ADMAG position

Connect the power and ground cables to the AM012.

Connect the power cable to the AM012.
Ground the terminal of the AM012 to protect it from external noise.
After turning the power on, let the instrument warm up for at least ten minutes.

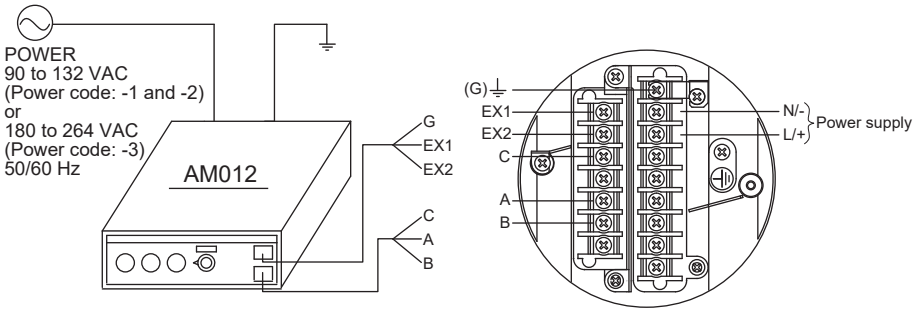


Figure 4.8.1 Interconnection Diagram

Proceed to 4.8.2 Checking Procedure.

4.8.2 Checking Procedure

(1) Standard dual frequency excitation

Confirm AM012 FUNCTION.

Confirm the AM012 FUNCTION switch to the "ADMAG" position.

Turn the AXFA14 power ON.

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 set on the AM012.

Set the flow velocity of the span with the AM012 span setting dial. Firstly, be sure to confirm that the "C31 Nominal Size Unit" parameter of AXFA14 is set to "mm". The flow velocity(m/s) can be checked with "C44 Velocity Check" parameter of AXFA14.

Change the AXFA14 set values.

- **Set the "C20 Measure Mode" to "Standard DF".** (Before changing the mode, write down the previous value)
- Set both the "C21 Low MF" and "C22 High MF" meter factors to 1.0000. (Before changing the meter factors, write down the previous values.) Read Subsection 4.8.3, "Meter Factor Setting."

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)
Connect AM012 and AXFA14, and perform the zero adjustment. When zero adjustment is performed with AM012 connected, connect the converter to the detector, zero adjustment of the converter is necessary again. (See Note 4 below)

Check the span and output accuracy.

Turn the output (%) knob to 25%, 50%, 75% and 100% in turn and check the indicated values. After setting the value, let the AM012 stabilize at least a minute. (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 AXFA14 set values to their initial values.

- Return the "C20 Measure Mode" to the initial value which was previonsly recorded.
- Return both the "C21 Low MF" and "C22 High MF" meter factors to their initial values which were previously recorded.
- Return the "C31 Nominal size Unit" to the initial value.

Turn the AXFA14 power OFF.

Remove the power supply and ground cables from the AM012.

Remove the signal and excitation cables from the AM012.

Connect the AXFA14 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 AXFA14, 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.
Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.
Note 4 : If the fluid can not be returned to a full water state or stopped state and zero adjustment can not be performed again under operating conditions, check the zero point value of AXFA14 beforehand and subtract the zero point value of AXFA14 from the output value.

(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.

Confirm AM012 FUNCTION.

Confirm the AM012 FUNCTION switch to the "ADMAG" position.

Turn tne AXFA14 power ON.

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 set on the AM012.

Set the flow velocity of the span with the AM012 span setting dial. Firstly, be sure to confirm that the "C31 Nominal Size Unit" parameter of AXFA14 is set to "mm". The flow velocity(m/s) can be checked with "C44 Velocity Check" parameter of AXFA14.

Change the AXFA14 set values.

- **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.) Read Subsection 4.8.3, "Meter Factor Setting."

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)
Connect AM012 and AXFA14, and perform the zero adjustment. When zero adjustment is performed with AM012 connected, connect the converter to the detector, zero adjustment of the converter is necessary again. (See Note 4 below)

Check the span and output accuracy.

Turn the output (%) knob to 25%, 50%, 75% and 100% in turn and check the indicated values. After setting the value, let the AM012 stabilize at least a minute. (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 AXFA14 set values to their initial values.

- Return the "C20 Measure Mode" to the initial value which was previonsly recorded.
- Return both the "C23 Low MF (EDF)" and "C24 High MF (EDF)" meter factors to their initial values which were previously recorded.
- Return the "C31 Nominal size Unit" to the initial value.

Turn the AXFA14 power OFF.

Remove the power supply and ground cables from the AM012.

Remove the signal and excitation cables from the AM012.

Connect the AXFA14 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 AXFA14, 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.
Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.
Note 4 : If the fluid can not be returned to a full water state or stopped state and zero adjustment can not be performed again under operating conditions, check the zero point value of AXFA14 beforehand and subtract the zero point value of AXFA14 from the output value.

4.8.3 Meter Factor Setting

The meter factors can be set using three keys of AXFA14 converter, or using HHT (Hand-held 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, read the AXFA14 Remote Converter User’s Manual IM 01E20C02-01E or AXF Integral Flowmeter User’s Manual IM 01E20D01-01E.

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

When using the AM012 calibrator with the 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 junction box is necessary, contact the nearest YOKOGAWA office.

4.10 When AM012 is used with AXR integral flowmeter

When using the AM012 calibrator with the AXR integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration. If junction box is necessary, contact the nearest YOKOGAWA office.

4.11 When AM012 is used with AXG4A and AXW4A remote converter, AXG and AXW integral flowmeter

This section describes the case of using the AM012 calibrator with the AXG4A and AXW4A remote converter.

When using the AM012 calibrator with the AXG and AXW integral flowmeter, remove the amplifier only from the converter and put it in the dedicated junction box for calibration.

If junction box is necessary, contact the nearest YOKOGAWA office.

4.11.1 Interconnections

Turn the AXG4A or AXW4A power OFF.

↓

Disconnect the signal and excitation wirings for the AXG4A or AXW4A.

↓

Connect the signal and excitation cables to the AM012.

See Figure 4.11.1 for details of the connection.

↓

Change AM012 FUNCTION.

Slide the AM012 FUNCTION switch to the ADMAG position.

↓

Connect the power and ground cords to the AM012.

Connect the power cable to the AM012.
Ground the terminal of the AM012 to protect it from external noise.
After turning the power on, let the instrument warm up for at least five minutes.

↓

Proceed to 4.11.2 Checking Procedure.

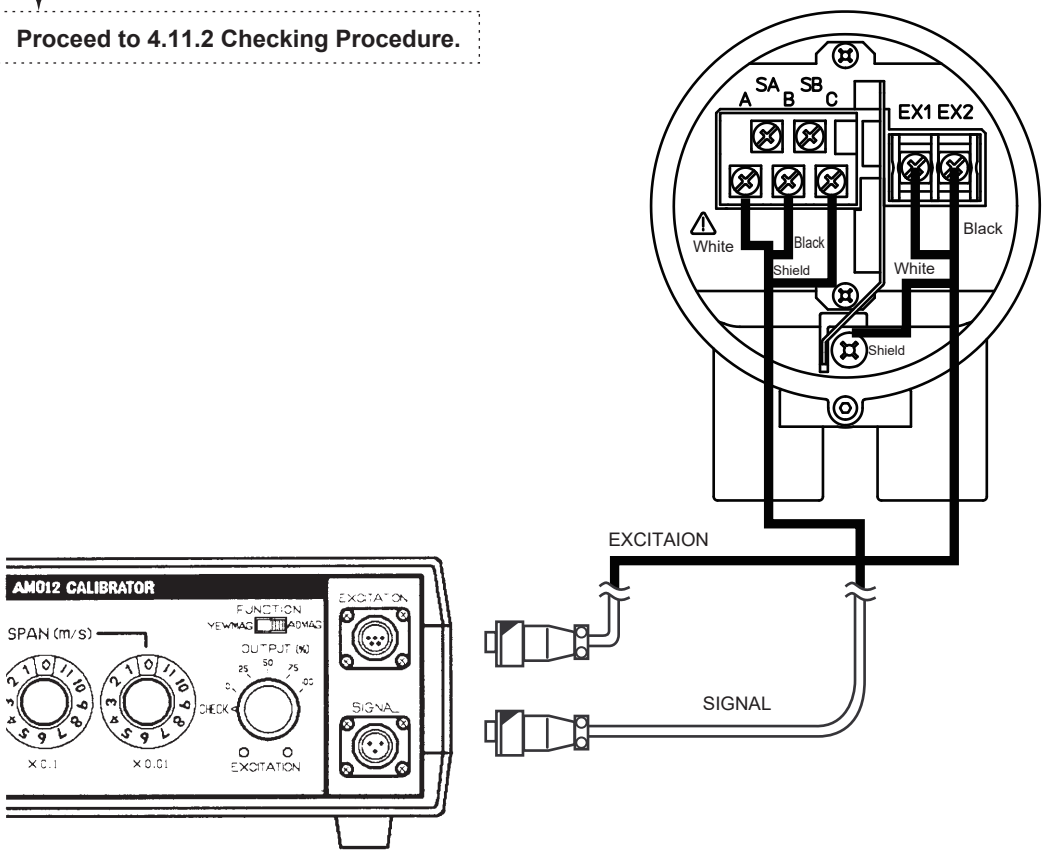


Figure 4.11.1 Interconnection Diagram

4.11.2 Checking Procedures

Confirm AM012 FUNCTION.

Confirm the AM012 FUNCTION switch to the "ADMAG" position.

Turn the AXG4A or AXW4A power ON.

- Set the "C24 FLOW SENSOR" to "Calibrator". (See Note 2 below)
- 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 five minutes.

Span set on the AM012.

Set the flow velocity of the span with the AM012 span setting dial. The flow velocity(m/s) can be checked with "C40 VEROCITY CHECK" parameter of AXG4A or AXW4A.

Check the zero point.

Set the output (%) knob to 0% to check the zero point (See Note 2 below).

Zero adjustment.

At "C51: AUTOZERO EXE" parameter of AXG4A or AXW4A, zero adjustment is performed. After performing zero adjustment, wait for at least 30 seconds.

Check the span and output accuracy.

Turn the output (%) knob to 25%, 50%, 75% and 100% in turn to check the indicated values. After setting the value, let the AM012 stabilize at least a minute. (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 AXG4A or AXW4A set values to their initial values.

- **Set the "C24 FLOW SENSOR" to following settings.**
  AXG4A: "ADMAG AXG"
  AXW4A: "ADMAG AXW"
  After parameter setting, wait for at least five seconds.

Turn the AXG4A or AXW4A power OFF.

Remove the power supply and ground cables from the AM012.

Remove the signal and excitation cables from the AM012.

Connect the AXG4A or AXW4A signal and excitation cables.

End

Note 1 : If no exciting current flows, the two excitation lamps do not flash correctly.
Note 2 : When set to "Calibrator", "Low MF", "High MF", and zero value are set to values dedicated to the calibrator. It is not necessary to save "MF" and zero value.
Note 3 : A common mode noise signal equivalent to a set value with the span-setting dial is output from the AM012.
Note 4 : The parameters are as follows.

BRAIN: C24:FLOW SENSOR
Display: Device setup ► Detailed setup ► Sensor ► Flow sensor sel
HART: Device root menu ► Detailed setup ► Sensor ► Flow sensor select

BRAIN: C40:VEROCITY CHECK
Display: Device setup ► Detailed setup ► Pro var ► Velocity check
HART: Device root menu ► Detailed setup ► Process variables ► Velocity check

BRAIN: C51:AUTOZERO EXE
Display: Device setup ► Diag/Service ► Autozero ► Execute
HART: Device root menu ► Basic setup ► Autozero ► Autozero Exe