

X10221 – AFM11

Universal Phase Angle Trigger Module

Issue 10



1 Introduction

This single-phase or phase-to-phase trigger module uses variable phase-angle control with adjustable signal matching, current limit input and adjustable soft-start. The pulse-train output is reliable, powerful, and universally applicable to resistive or inductive loads. The ac input supply transformer (optional extra) is remote for increased reliability and wide operational voltage capability. Adjustable current limit allows feedback control and via a few external parts, this can give voltage or speed control of ac or dc loads. The module is fully enclosed for safety and eligibility in industrial environments

2 Applications

This unit is applicable to most AC or DC, resistive or inductive loads. Typically used in complete power assemblies (stacks) for controlling thyristors, TRIAC, or hybrid diodes on single-phase to neutral, or phase-to-phase supplies, within the line voltage limits (see typical power connections section).

3 Features

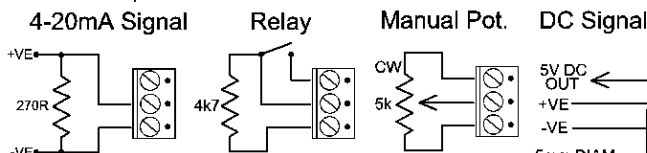
The AFM11 has many useful features including the following:

- Fires TRIACs or thyristors up to 480VAC
- Adjustable soft-start function
- Adjustable current limit control
- Pulse training firing via isolation transformer
- Consumes fewer than 2W
- Status (LED) indication



4 Installation

Control Options For Terminals 3, 4 & 5

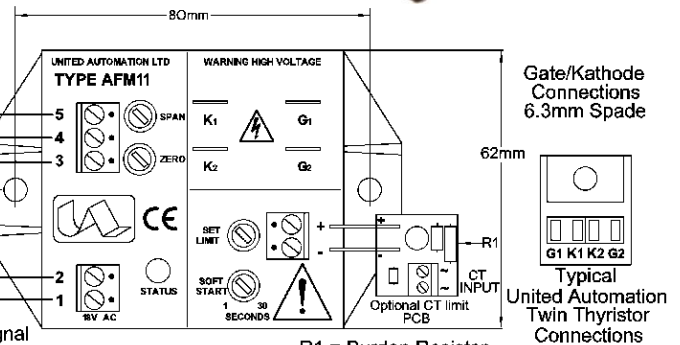


Factory preset for MANUAL or 0 to 5V dc control signal
Refer to datsheet reference X10390 for span and zero calibration

NOTE

AC input supply must be isolated from signal and be in phase with the LINE supply.

18 to 24V ac @ 100mA



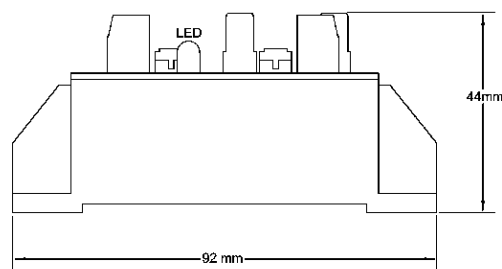
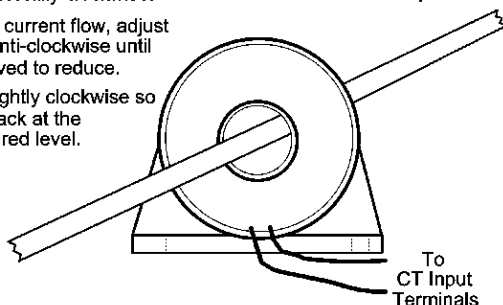
R1 = Burden Resistor
Select burden resistor to achieve approximately 5V ac
For 32A CT, see X10389
For 240A CT, see X10424

CURRENT LIMIT SET UP

1. Set LIMIT cermet fully clockwise.
2. With maximum current flow, adjust LIMIT cermet anti-clockwise until output is observed to reduce.
3. Turn cermet slightly clockwise so that output is back at the maximum required level.

OPTIONAL "CT"

If Current Limit is required



WARNING !

ENSURE SUPPLY IS OFF BEFORE COMMENCING ANY SERVICING WORK

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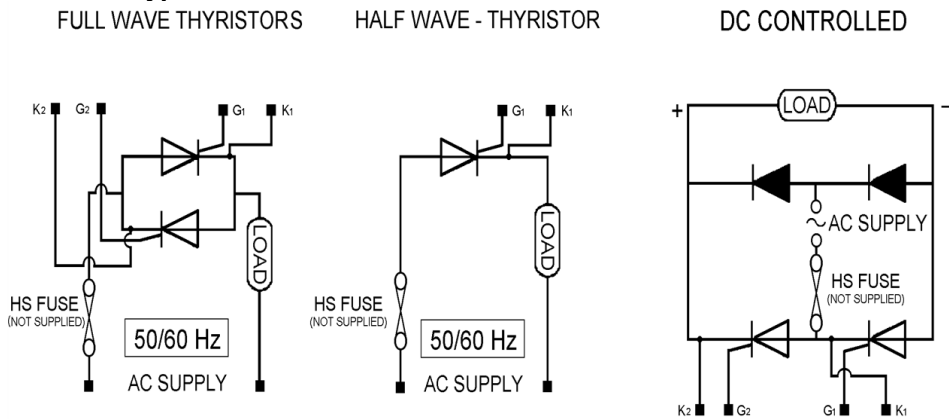
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5 Power Connections – Typical



6 Specifications

Signal Span Minimum	0 – 2.5VDC (see X10390)	AC Input Supply (nominal)	18 – 24VAC RMS @ 100mA
Signal Span Maximum	0 – 25VDC (see X10390)	Auxiliary Output (nominal)	5VDC @ 20mA
Signal Zero Offset	0 – 50% of span (see X10390)	Thyristor Line Voltage	12 – 480VAC RMS @ 50/60Hz
Signal Input Resistance	5kΩ ±20%	Manual Potentiometer	2kΩ, 5kΩ or 10kΩ
Trigger Pulse Height	8V open circuit	Limit Feedback Input	0.6 – 30VDC
Trigger Pulse Rating	250mA in to 10Ω	Soft-start	1 – 30 seconds (adjustable)
Trigger Isolation Voltage	2500VAC RMS	Storage Temperature	0°C – 85°C
Trigger Outputs (G & K)	Short circuit protected	Operating Temperature	0°C – 75°C

Note: Limit feedback input – may be in the form of a current transformer used with a feedback PCB (details as shown in installation section) or a shunt used with an amplifier PCB (details not given – for information contact the technical sales desk)

7 Fusing

It is recommended that this unit's AC supply should be fused for safety and unit protection. An appropriate 250VAC, fast-acting, glass-type fuse (typically F1A glass 20mm x 5mm Ø) should be used (see the SRA datasheet in the recommendations section for further information).

8 CE Marking

This product family carries a "CE" marking. These phase angle controllers need a suitable remote filter. For information see recommendation section and contact our sales desk (see Declaration of Conformity).

9 Recommendations

Other documents available upon request, which may be appropriate for your application.

Code	Identity	Description
X10229	RFI	Filter recommendations: Addressing the EMC directive
X10213	ITA	Interaction: Uses for phase angle and for burst fire control
X10255	SRA	Safety requirements: Addressing the Low Voltage Directive (LVD) including Thermal data/Cooling, Live parts warning, Earthing requirements and Fusing recommendations
P01.1	COS	UAL Conditions of Sale
X10378	ILR	Inductive loads remedy sheet for use with phase angle controllers
X10390	ZSS	For signal zero and span calibration setup & adjustment
X10389, X10424		For Current Transformer (CT) performance graph – 32A & 240A respectively

Note: It is recommended that installation and maintenance of this equipment should be done with reference to the current edition of the I.E.T. (formally I.E.E.) regulations (BS7671) by suitably qualified/trained personnel. The regulations contain important requirements regarding installation and safety of electrical equipment. Specific installers should refer to local and national regulations.

10 Order Code

Part Number	AFM11
Optional Extras	Potentiometer – for manual control; supply transformer
Complete 'ready for use' assemblies	Stack assembly (SCRs/transformers/fusing/heatsink), appropriate filter to match load, current transformers, current transformer feedback PCB

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