## AMIS-49200EVB

## AMIS-492x0 Fieldbus MAU Evaluation Board User's Manual

#### Introduction

ON Semiconductor offers the AMIS-492x0 Fieldbus Media Access Unit (MAU) as part of an overall industrial network communication solution. Please refer to the AMIS-492x0 data sheet for more information on this integrated circuit. The scope of this user's manual focuses on a reference design and board that ON Semiconductor also offers its customers, and which satisfies the Foundation Fieldbus H1 or Profibus PA physical layer network requirement.

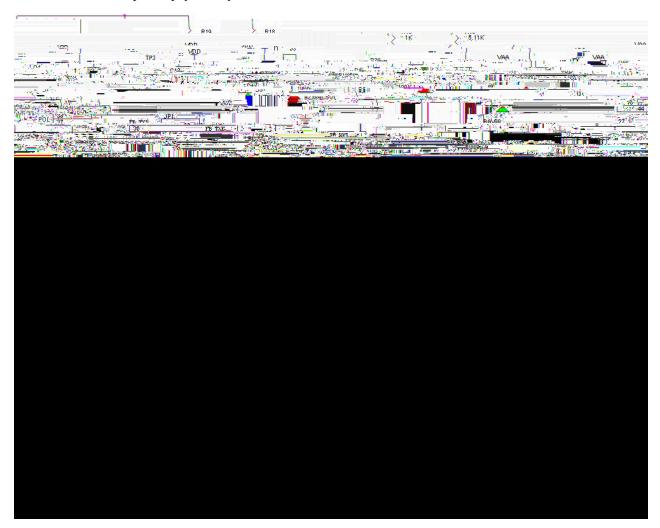
This user's manual helps the user design in the

configurations. We strongly encourage customers to use the ON Semiconductor reference design to provide the most effective application support.

Whether or not the ON Semiconductor reference design is used, we recommend that the customer perform their own physical layer board test to ensure conformance. In addition, board layout can alter the behavior of all circuit implementations, even designs that follow the recommended implementation. Fieldbus Foundation (www.fieldbus.org) provides the required test specifications to their membership only. ON Semiconductor cannot provide these specifications to customers.

Although the ON Semiconductor reference design in the AMIS-492x0 data sheet passed physical layer conformance

as is, often this design can be slightly modified given unique application-related traits. Figure 12 in the AMIS-492x0 data sheet shows a general schematic independent of board layout. Figure 2 shows the AMIS-492x0 reference design that includes extra components to accommodate such application flexibility. This schematic together with PCB build files and a bill of material (BOM) constitute the AMIS-492x0 reference design package which can be found at the link listed in this document's reference section. The design in Figure 2 also passes the Foundation Fieldbus test (FF830, Rev. 1.5).





Please note the following:

- A bridge rectifier was added to interface with the medium. This allows proper, correct operation regardless of polarity hook-up.
- Test points are included to provide convenient access to the circuit for development purposes.
- Certain sub-circuits (e.g. voltage dividers) have been added to adjust analog (shunt regulator) supply voltage, digital (series regulator) supply voltage, and loop current settings (loop current regulator). Figure 2 shows these components as "TBD" to be adjusted by the customer as needed to modify the design to their application requirements. The "TBD" resistors not installed by default on the reference board are listed in Table 1.

Resistor	Used to Adjust
R12	Shunt regulator voltage
R13	Shunt regulator voltage
R8	Series regulator voltage
R23	Series regulator voltage
R22	Loop current

# Table 1. Components That May Be Modified on theReference Board

### **Shunt Regulator**

See Section 4.2.1 and Figure 4 in the AMIS-492x0 data sheet.

As assembled the shunt regulator output will be 5.02 V at Pin 8 (SHUNT). This voltage is set by connecting Pin 7 (SHSET) to Pin 6 (SHSETin) via R11 (zero  $\Omega$ ). This connection connects the internal voltage divider to the shunt regulator amplifier non-inverting input.

To set the shunt regulator output to another voltage, remove R11 and install R12 and R13. The shunt regulator voltage can be set in the range of 4.75 V to 6.2 V. The formula for this is:

V<sub>SHUNT</sub> V<sub>ref</sub>

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### Appendix (A) Component Label Cross Reference

The component values in Figure 2 in this document and Figure 12 in the AMIS-492x0 data sheet are differently labeled. For convenience, a cross-reference list is found in Table 2.

Reference Board	Data Sheet	Reference Board	Data Sheet	Reference Board	Data Sheet
C1	C5	D5	D3	R13	N/A
C2	C6	Q1	Q2	R14	R11
C3	C9	Q2	Q4	R15	R10
C4	C8	Q3	Q3	R16	R8
C5	C3	Q4	Q1	R17	R7
C6	C1	R1	N/A	R18	R4
C7	C2	R2	R1	R19	R6
C8	C4	R3	R2	R20	R5
C9	C11	R4	n/a	R21	R3
C10	N/A	R5	R12	R22	N/A
C11	C10	R6	R9	R23	N/A
C12	C7	R7	N/A	R24	N/A
C13	N/A	R8	N/A	R25	N/A
D1	N/A	R9	N/A	U2	D1
D2	N/A	R10	N/A	U2	D2
D3	N/A	R11	N/A	VAA	Vshunt
D4	N/A	R12	N/A		

 Table 2. Component Cross-Reference List between Reference Design and Data Sheet

This evaluation board ct this interference.	kit does not fall within the scovwathis equipment may cause interference with radio
	shall not be liable for any special, consequential, incidental, indirect or punitive damages, including, but not limited to the costs of requalification, delay, loss of profits or goodwill, arising out of or in connection with the board, even if <b>onsemi</b> is advised of the possibility of such damages. In no event shall <b>onsemi</b> 's aggregate liability from any obligation arising out of or in connection with the board, under any theory of liability, exceed the purchase price paid for the board, if any.
	The board is provided to you subject to the license and other terms per <b>onsemi's</b> standard terms and conditions of sale. For more information and documentation, please visit www.onsemi.com.
	ADDITIONAL INFORMATION

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