SECTION 40 72 23

GUIDED RADAR LEVEL METERS for SOLIDS

PART 1-GENERAL

A. Micropilot FMR56 is particularly designed for light-duty process conditions as they occur in silos or bins for solids. Micropilot free space radar is used for continuous, non-contact level measurement in powdery to granular bulk solids. Dust, filling noises, temperature layers and gas layers do not affect the measurement.

B. 1.02 SUBMITTALS

A. Furnish complete Product Data, Shop Drawings, Test Reports, Operating Manuals, Record Drawings, Manufacturer's certifications, Manufacturer's Field Reports

B. Product Data:

1. Dimensional Drawings.
2. Materials of Construction:
   a. Transmitter housing
   b. Antenna or horn.
3. Measurement accuracy.
4. Range and range ability.
5. Enclosure Rating.
6. Classification Rating.
7. Power:
   a. Voltage.
   b. Wattage.
8. Output options.

1.03 QUALITY ASSURANCE

A. Manufacture instruments facilities certified to the quality standards of ISO Standard 9001 - Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation, and Servicing.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store all instruments in a dedicated structure with space conditioning to meet the recommended storage requirements provided by the Manufacturer.

B. Any instruments that are not stored in strict conformance with the Manufacturer's recommendation shall be replaced.

1.05 PROJECT OR SITE CONDITIONS

A. Provide instruments suitable for the installed site conditions including, but not limited to, material compatibility, site altitude, process and ambient temperature, and humidity conditions.

1.06 WARRANTY

A. The meter shall have standard one year warranty from date of shipment and if the meter is commissioned by a factory certified technician, the warranty is extended to three years from the date of shipment.

1.07 MAINTENANCE

A. Provide all parts, materials, etc. necessary for maintenance and calibration purposes throughout the warranty period. Deliver all of these supplies before project substantial completion.

1.08 LIFECYCLE MANAGEMENT

A. Instrument documentation, like original calibration certificates, manuals and product status information shall be accessed via a web enabled system with a license. The instrument-specific information shall be accessed via its serial number. When services are provided by an authorized service provider the services information like subsequent field calibrations shall be archived and accessible via this web enabled system.

PART 2PRODUCTS

2.01 MANUFACTURER

A. Endress+Hauser- Micropilot M FMR56

2.02 MANUFACTURED UNITS

A. The pulsed time of flight radar transmitter used primarily for solids applications, which shall operate at 26 GHz using 2-wire technology for level

measurement and provide a 4-20 mA HART output. Profibus PA or Foundation Fieldbus will also be available if required.

B. The unit shall be suitable for use in safety related systems (overspill protection) with requirements for functional safety up to SIL2 (SIL3 in homogenous redundancy) independently assessed by TUV in accordance to IEC 61508/IEC 61511-1.

C. The transmitter housing shall have dual compartments and be available in plastic, die cast aluminum with a powder Epoxy coating or 316L Stainless steel based on the application environment.

D. Unit shall have ATEX, FM, CSA or IECEx approvals as required.

E. Unit shall employ multi echo tracking algorithms for reliable level measurement.

F. The unit shall not be affected by changing media, changing temperatures, gas blankets or vapors. The transmitter shall measure almost completely independent from product properties.

G. The transmitter will feature a plastic antenna with sealed face for use in applications that would be subject to dust or product build-up. Optional antenna alignment device will be available if required for the installation.

H. The transmitter will have a 4 line LCD display, which can be remote mounted if required. All programming and set-up can be done by the three buttons on the display. The unit will have the capability of mapping out any object that causes an interference the in the radar reflections.

I. FDT based software shall be provided for optional remote method of configuration, set-up and storage of parameters via a computer.

J. The display module shall be capable of data backup, data comparison and data transfer functions.

K. It must be possible to view a graphical representation of the actual signal and envelope curve on the display.

L. The transmitter will have a 32 point linearizer to correct output to represent volume measurement or use as a strapping table for level correction.

M. The unit shall have a measuring range up to 98 ft (30 m)

N. The unit shall be suitable for process temperatures up to 176° F (80° C). It shall also withstand pressures of -14.5 to 43.5 psi.

O. The transmitter shall have a built-in HistoRom which will store the configuration data and be capable of logging 100 events based on programmed triggers.

2.03 ACCESSORIES

A. Weather protection cover

B. Remote display FHX50

2.04 SOURCE QUALITY CONTROL

A. Provide ISA data sheet ISA-TR20.00.01. Use the latest revision of form 20F2321. Complete the form with all known data, and dash out the inapplicable fields. Incomplete data sheets submitted will be result in a rejected submittal.

B. Provide complete documentation covering the manufacturing and calibration.

2.05 SAFETY

A. All electrical equipment shall meet the requirements of ANSI/NFPA 70, NATIONAL ELECTRIC CODE, latest addition.

B. All devices shall be capable of being certified for use in hazardous areas: Class I, II, III, Div. 2, Groups A-G.

C. All devices shall be suitable for use as non-incendive devices when used with appropriate non-incendive associated equipment. Devices with intrinsically safe ratings will normally be acceptable with vendor's approval.

D. Transmitter housing shall conform to NEMA 4x classification.

E. Non-intrinsically safe electrical equipment shall be approved by a Nationally Recognized Testing Laboratory (NRTL) such as FM, UL, ETL, CSA, etc. for the specified electrical area classification.

F. Electrical equipment specified as intrinsically safe shall qualify as "simple apparatus" or NTRL approved intrinsically safe equipment per ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations", latest edition.

PART 3-EXECUTION

3.01 EXAMINATION

A. Examine the complete set of plans, the process fluids, pressures, and temperatures and furnish instruments that are compatible with installed process condition.

B. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As shown on installation details and mechanical Drawings.

B. As recommended by the manufacturer's installation and operation manual.

C. Specific attention should be given to the following technical requirements:

1. Verify the nozzle height, dimension, and location where the transmitter has been installed.

3.03 FIELD QUALITY CONTROL

A. Demonstrate the performance of all instruments to the ENGINEER before commissioning.

B. ENGINEER to witness all instrument calibration verification in the field.

C. Each instrument shall be tested before commissioning and the ENGINEER shall witness the response in the PLC control system and associated displays.

D. Manufacturer's Field Services:

1. Manufacturers' representative shall verify installation of all installed transmitters.

2. Notify the ENGINEER in writing of any problems or discrepancies and proposed solutions.

3.04 ADJUSTING

A. Verify set-up and configuration of all instruments in accordance with the Manufacturer's instructions.

3.05 PROTECTION

A. All instruments shall be fully protected after installation and before commissioning.

1. Replace any instruments damaged before commissioning:
2. The ENGINEER shall be the sole party responsible for determining the corrective measures.