smar - IR303

PROFIBUS-PA
Remote Indicator

APR / 15
IR303
VERSION 3

IR303ME

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INTRODUCTION

The **IR303** (8-Variable Remote Indicator PROFIBUS-PA) works with any PROFIBUS-DP class 1 master and is ideal for applications with any PROFIBUS-PA device. The **IR303** easily integrates device without LCD display or beyond the reach of or hardly accessed by the user, thus facilitating on-field monitoring.

Through 8 input variables, via cyclic communication with any PROFIBUS-DP master, it allows up to 8 cyclic variables on the same device or up to 8 different devices to be monitored or switched on the LCD display. It eliminates, for example, the need for the user to go to the device to check its condition on the field or on the upper level of a tank, or even on a hazardous area.

The power supply and the communication on the same device turn the **IR303** an easy to use compact device, which needs less room in panels when compared to other solutions.

The **IR303** is built in the SYSTEM302 and can easily be integrated to other PROFIBUS-PA-supported systems.

Get the best results from the IR303 by carefully reading these instructions.

NOTE
In case of using Simatic PDM as the configuration and parameterization tool, Smar recommends that the user does not apply the option "Download to Device". This function can improperly configure the field device. Smar recommends that user make the use of the option "Download to PG / PC" and then selecting the Device Menu, use the menus of the transducer, function and display blocks acting specifically, according to each menu and method for reading and writing.

WARNING
This Manual is compatible with version 3.XX, where 3 denotes software version and XX software release. The indication 3.XX means that this manual is compatible with any release of software version 3.

Waiver of responsibility

The contents of this manual abides by the hardware and software used on the current equipment version. Eventually there may occur divergencies between this manual and the equipment. The information from this document are periodically reviewed and the necessary or identified corrections will be included in the following editions. Suggestions for their improvement are welcome.

Warning

For more objectivity and clarity, this manual does not contain all the detailed information on the product and, in addition, it does not cover every possible mounting, operation or maintenance cases.

Before installing and utilizing the equipment, check if the model of the acquired equipment complies with the technical requirements for the application. This checking is the user's responsibility.

If the user needs more information, or on the event of specific problems not specified or treated in this manual, the information should be sought from Smar. Furthermore, the user recognizes that the contents of this manual by no means modify past or present agreements, confirmation or judicial relationship, in whole or in part.

All of Smar's obligation result from the purchasing agreement signed between the parties, which includes the complete and sole valid warranty term. Contractual clauses related to the warranty are not limited nor extended by virtue of the technical information contained in this manual.

Only qualified personnel are allowed to participate in the activities of mounting, electrical connection, startup and maintenance of the equipment. Qualified personnel are understood to be the persons familiar with the mounting, electrical connection, startup and operation of the equipment or other similar apparatus that are technically fit for their work. Smar provides specific training to instruct and qualify such professionals. However, each country must comply with the local safety procedures, legal provisions and regulations for the mounting and operation of electrical installations, as well as with the laws and regulations on classified areas, such as intrinsic safety, explosion proof, increased safety and instrumented safety systems, among others.

The user is responsible for the incorrect or inadequate handling of equipments run with pneumatic or hydraulic pressure or, still, subject to corrosive, aggressive or combustible products, since their utilization may cause severe bodily harm and/or material damages.

The field equipment referred to in this manual, when acquired for classified or hazardous areas, has its certification void when having its parts replaced or interchanged without functional and approval tests by Smar or any of Smar authorized dealers, which are the competent companies for certifying that the equipment in its entirety meets the applicable standards and regulations. The same is true when converting the equipment of a communication protocol to another. In this case, it is necessary sending the equipment to Smar or any of its authorized dealer. Moreover, the certificates are different and the user is responsible for their correct use.

Always respect the instructions provided in the Manual. Smar is not responsible for any losses and/or damages resulting from the inadequate use of its equipments. It is the user's responsibility to know and apply the safety practices in his country.
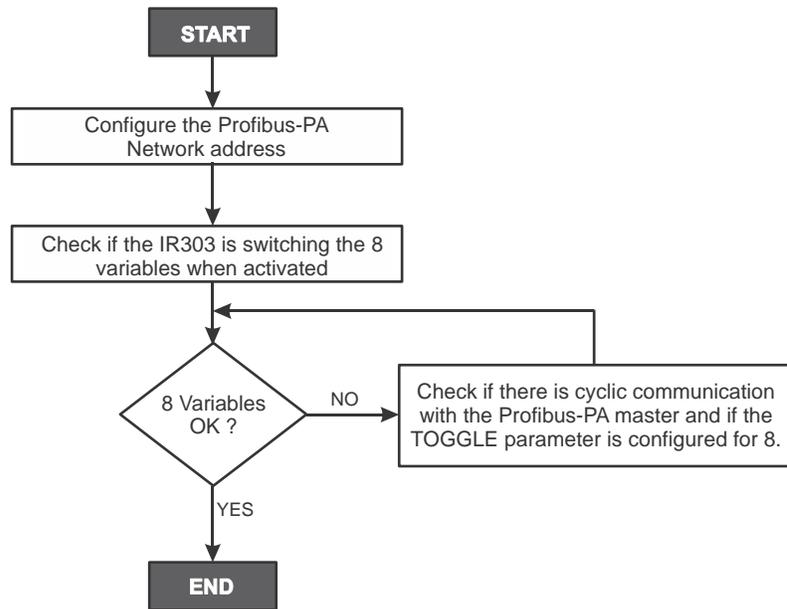
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Installation Flowchart

```
┌─────────────────────────────────────────┐
│                ATTENTION                  │
├─────────────────────────────────────────┤
│       Get the best results from the IR303 │
│       by carefully reading the entire manual. │
└─────────────────────────────────────────┘
```

```
        ┌──────────┐
        │  START   │
        └──────────┘
             │
             ▼
   ┌─────────────────────────┐
   │  Configure the Profibus-PA │
   │     Network address        │
   └─────────────────────────┘
             │
             ▼
   ┌─────────────────────────┐
   │ Check if the IR303 is switching the 8 │
   │   variables when activated │
   └─────────────────────────┘
             │
             ▼
          ◇ 8 Variables        NO      ┌─────────────────────────────┐
          ◇   OK ?    ───────────────▶ │ Check if there is cyclic communication │
                                        │ with the Profibus-PA master and if the │
             │ YES                      │ TOGGLE parameter is configured for 8. │
             ▼                          └─────────────────────────────┘
        ┌──────────┐
        │   END    │
        └──────────┘
```

*More information in Section 1 of **IR303**, Operation, Maintenance and Instructions Manual.

Section 1

INSTALLATION

General

The overall accuracy of a control measurement depends on several variables. Although the **IR303** has an outstanding performance, proper installation is essential to maximize its performance.

Among all factors, which may affect **IR303** accuracy, environmental conditions are the most difficult to control. There are, however, ways of reducing the effects of temperature, humidity and vibration.

Locating the **IR303** in areas protected from extreme environmental changes can minimize temperature fluctuation effects.

The **IR303** should be installed in such a way as to avoid, as much as possible, direct exposure to the sun or any source of irradiated heat.

The electronic circuit is protected by a humidity proof coating, but frequent exposure to humidity may affect the protection provided. It is also important to keep the covers tightened in place. Every time they are removed, the threads are exposed to corrosion, since painting cannot protect these parts. Code-approved sealing methods should be employed on conduit entering the transmitter. The unused outlet connection should be plugged accordingly.

The **IR303** has been designed to be both rugged and lightweight at the same time. This makes its mounting easier; mounting positions are shown in Figure 1.1.
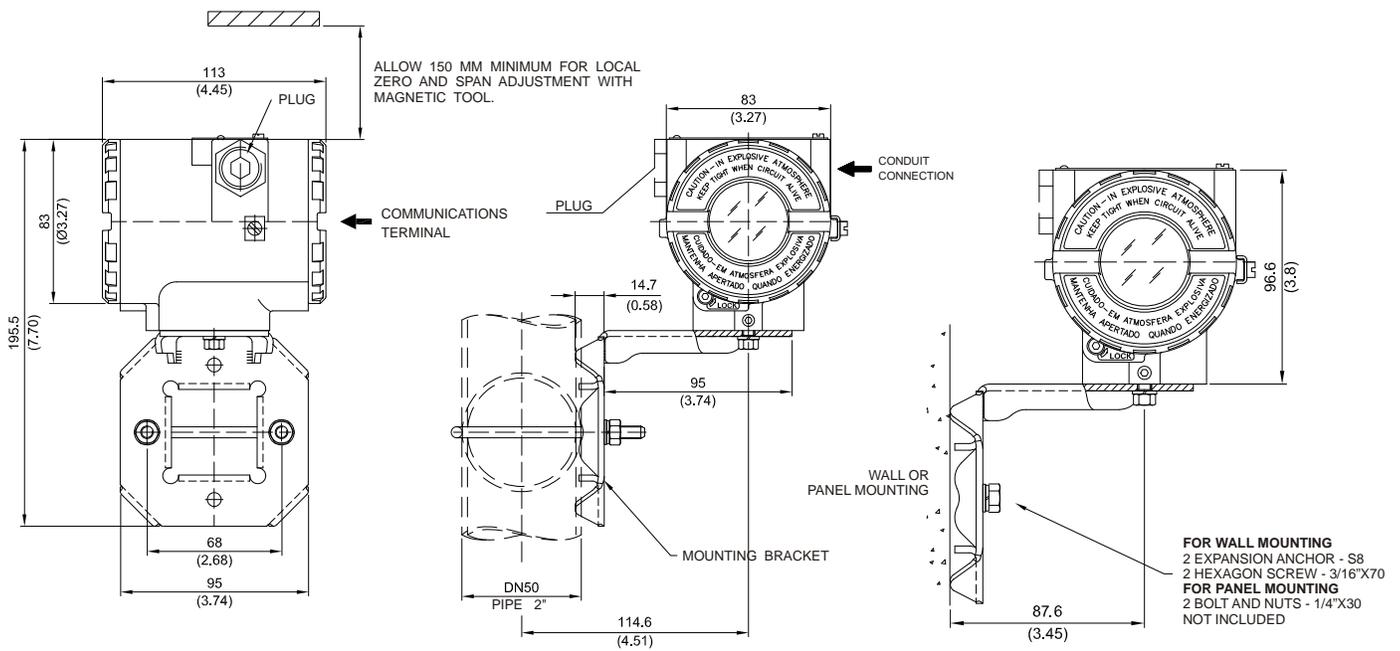

Figure 1.1 - Dimensional Drawing and Mounting Positions

Housing Rotation

The housing can be rotated in order to get the digital display in better position. To rotate it, releases the Housing Rotation Set Screw. See Figure 1.2.

The digital display itself can also be rotated. In Section 4.
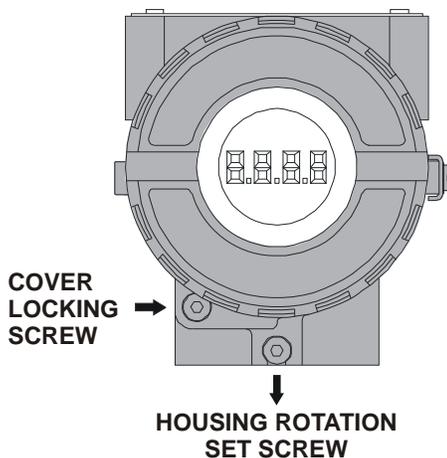
Figure 1.2 - Housing Rotation Set Screw

Electric Wiring

For convenience there are three ground terminals: one inside the cover and two externals, located close to the conduit entries. See figure 1.3.
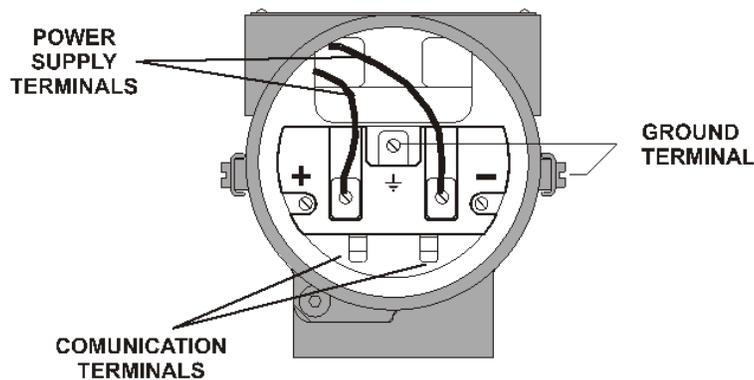
Figure 1.3 - Terminal Block

The **IR303** uses the 31.25 kbit/s voltage mode option for the physical signaling. All other devices on the same bus must use the same signaling. All devices are connected in parallel along the same pair of wires.

Various types of Profibus devices may be connected on the same bus.

The **IR303** is powered via the bus. The limit for such devices is according to the DP/PA coupler limitation for one bus for non-intrinsically safe requirement.

In hazardous area, the number of devices may be limited by intrinsically safe restrictions, according to the DP/PA coupler and barriers limitation.

The **IR303** is protected against reverse polarity, and can withstand ±35 VDC without damage, but it will not operate when in reverse polarity.

The Figure 1.4 shows the correct installation of the conduit, in order to avoid penetration of water, or other substance, which may cause malfunctioning of the device.

CORRECT   INCORRECT

Figure 1.4 - Conduit Installation Diagram

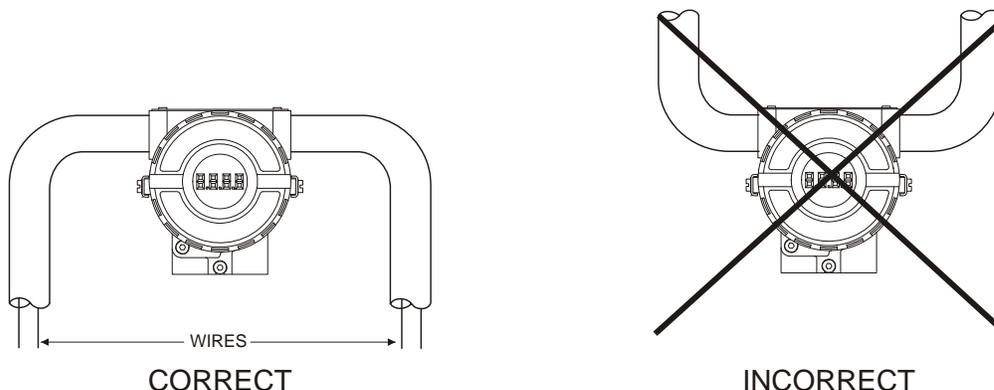| NOTE |
| --- |
| Please refer to the General Installation, Operation Manual and Maintenance Procedures Manual for more details. |

WARNING
In hazardous areas with explosion proof requirements, the covers must be tightened at least 8 turns. In order to avoid the penetration of moisture or corrosive gases, tighten the O-ring until it touches the housing. Then tighten 1/3 turn (120°) more to guarantee sealing. Lock the covers using the locking screw.
In hazardous zones with intrinsically safe or non incendive requirements, the circuit entity parameters and applicable installation procedures must be observed.
Cable access to wiring connections is obtained by one of the two conduit outlets. Conduit threads should be sealed by means of code-approved sealing methods. The unused outlet connection should be plugged and sealed accordingly.
Explosion proof, non incendive and intrinsic safety Factory Mutual certification are standard for
IR303.
Should other certifications be necessary, refer to the certification or specific standard for installation limitations.

Bus Topology and Network Configuration

Bus topology (See Figure 1.5) and tree topology (See Figure 1.6) are supported. Both types have a trunk cable with two terminations. The devices are connected to the trunk via spurs. The spurs may be integrated in the device giving zero spur length. A spur may connect more than one device, depending on the length. Active couplers may be used to extend spur length.

Active repeaters may be used to extend the trunk length.

The total cable length, including spurs, between any two devices in the Profibus should not exceed 1900 m.
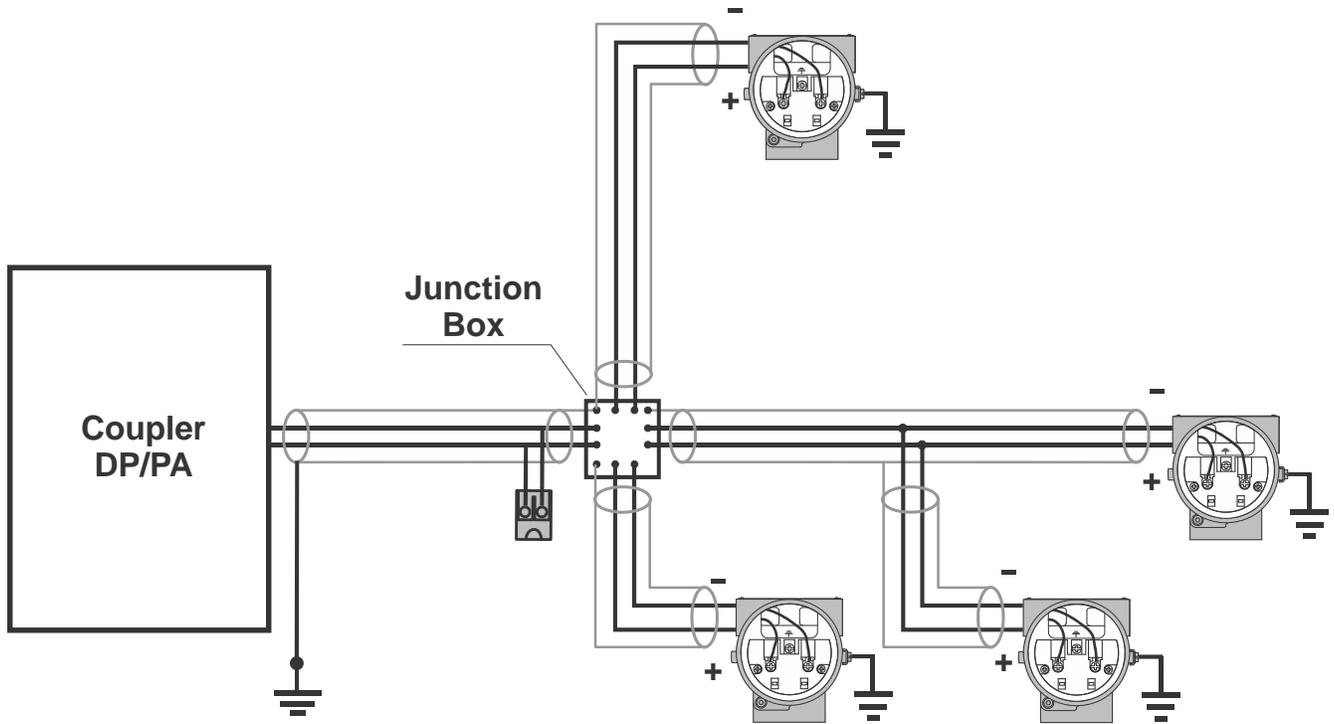
Figure 1.5 - Bus Topology
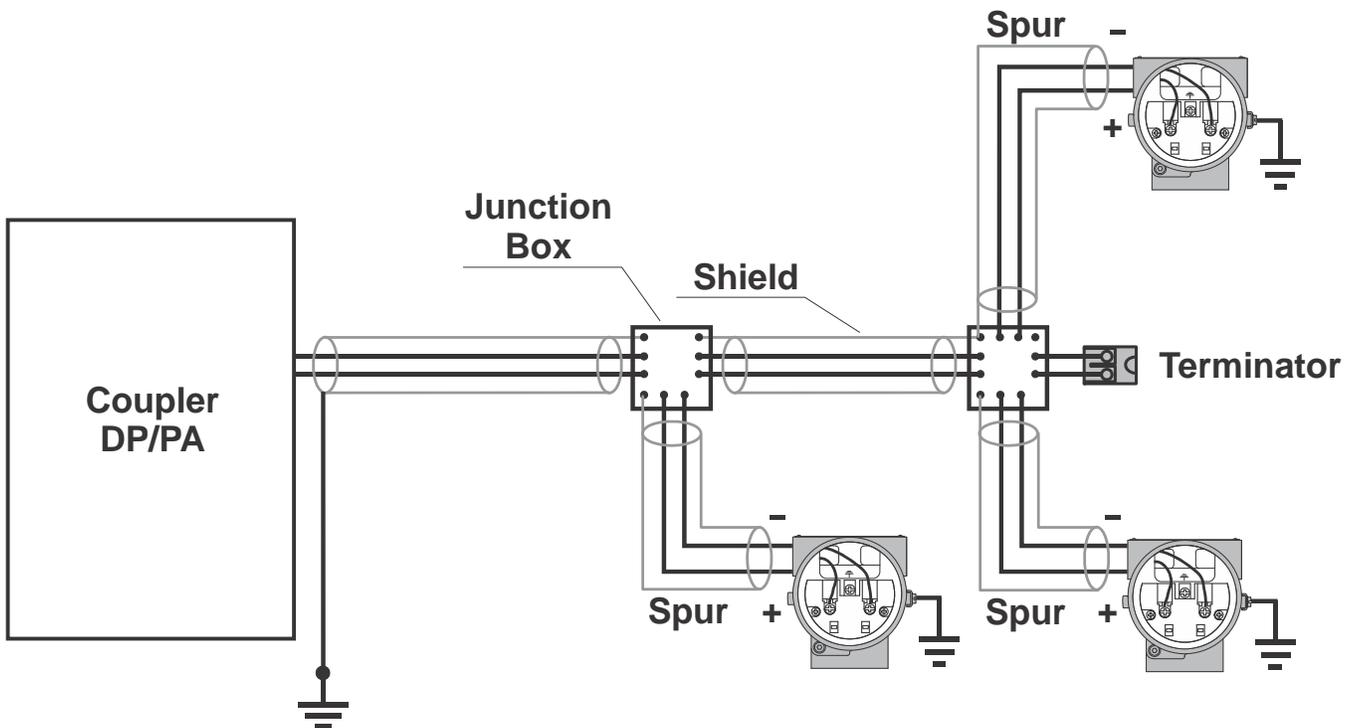

Figure 1.6 - Tree Topology

General System

According to the figure below, a general network topology can be seen where the **IR303** is integrated into a simple PROFIBUS-PA network.
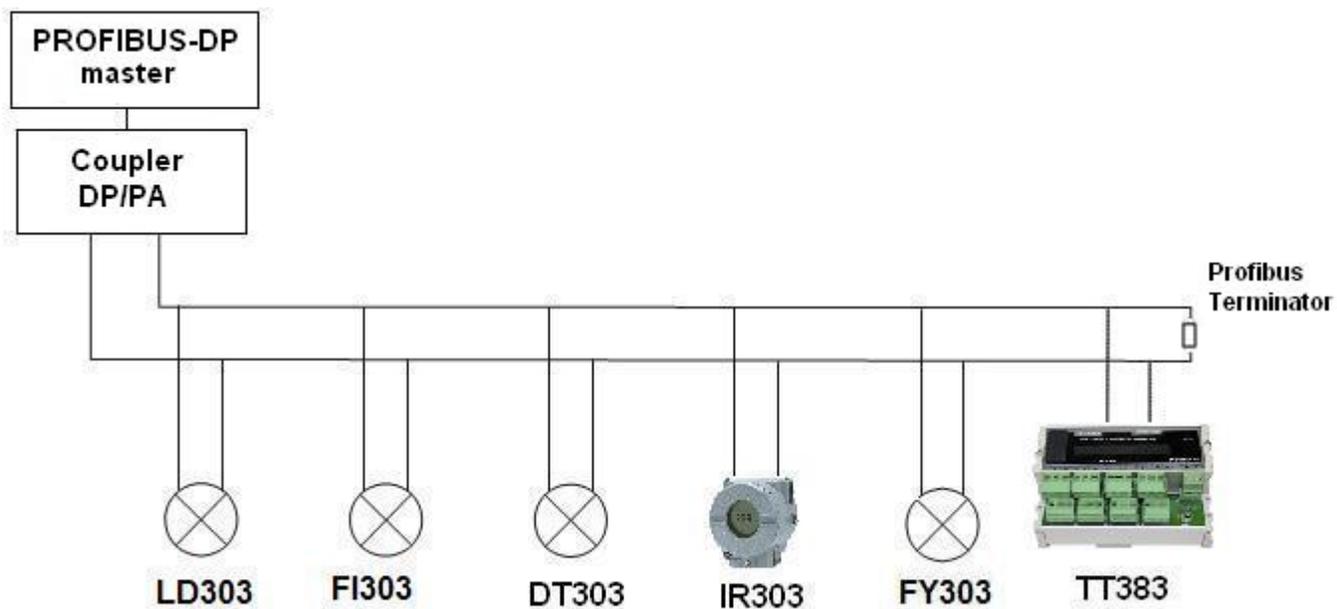
Figure 1.7 - IR303 and a general PROFIBUS-PA System

OPERATION

The **IR303** allows easy integration between devices without LCD display and facilitates on-field monitoring. Through 8 input variables via cyclic communication with the PROFIBUS-DP master it allows up to 8 cyclic variables on the same device or up to 8 different devices to be monitored or switched on the LCD display.

Functional Description – Electronics

Refer to the block diagram (See Figure 2.1 – **IR303** Block Diagram). The function of each block is described below.

(CPU) Central Processing Unit, RAM and FLASH
The CPU is the intelligent portion of the PROFIBUS-PA **IR303**, being responsible for the management and operation of block execution, self-diagnostics and communication. The program is stored in Flash memory. For temporary storage of data there is a RAM. The data in the RAM is lost if the power is switched off. However, the device also has a nonvolatile EEPROM where data that must be retained are stored. Examples of such data are configuration and identification data.

Communication Controller
It monitors line activity, modulates and demodulates the signal from the network.

Power Supply
Takes power of the loop-line to power the **IR303** circuitry.

Local Adjustment
There are two switches that are magnetically activated. They can be activated by the magnetic tool without mechanical or electrical contact.
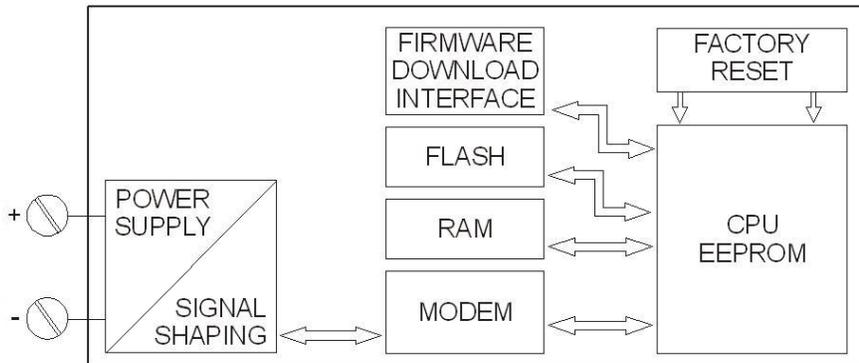
Figure 2.1 – IR303 Block Diagram

Section 3

CONFIGURATION

The **IR303** can be configured via SYSTEM302 or any other tool compliant to the PROFIBUS standard using EDDL or FDT/DTM.

The **IR303** has 8 Analog Output function blocks, the master writes cyclically on these blocks SP parameters and these variables are enabled on the **IR303** LCD display.

The Function Blocks are not mentioned in this manual. For explanations and details, see the Function Blocs manual.

On LCD display the mnemonics must be configured up to 5 characters.

How the Profibus Master sends the values of up to 8 variables to the IR303 LCD display

The Profibus master reads up to 8 variable+status from the Profibus network and sends these values to the **IR303** LCD display via SP (value+status) parameters of Analog Output function blocks.

For further information and details, see the Function Blocks manual
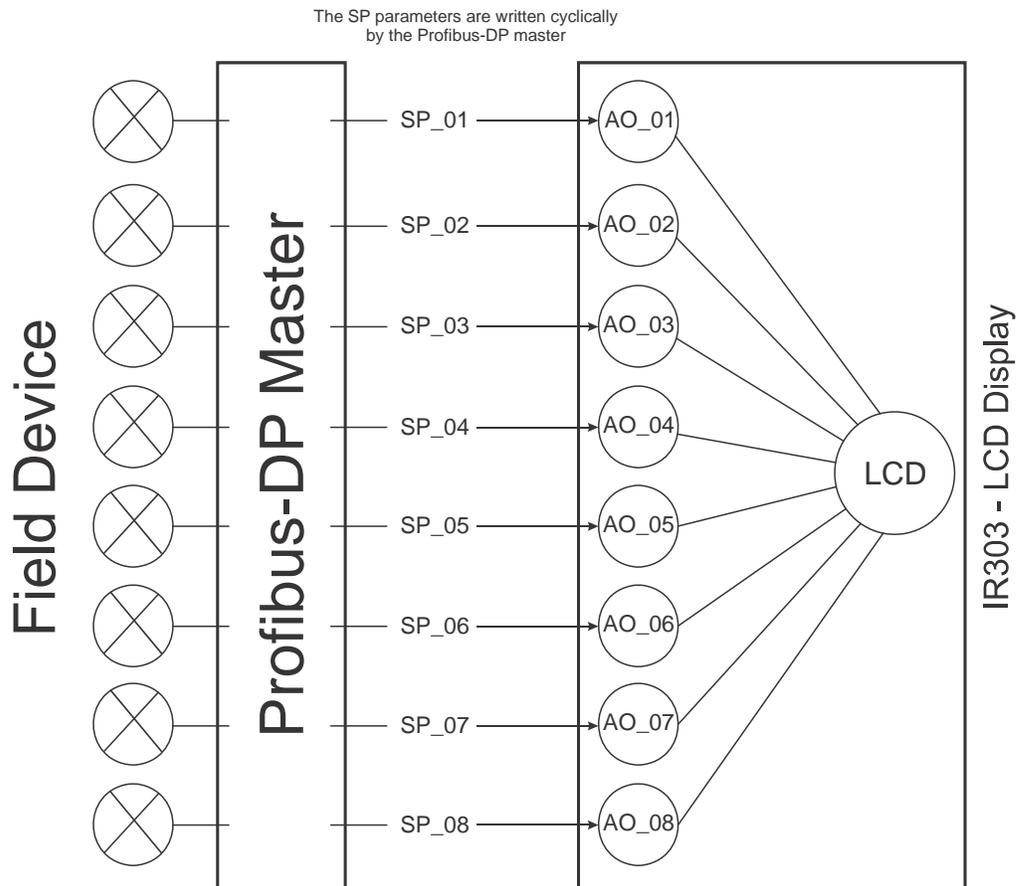
Figure 3.1 - PROFIBUS-DP master sends the variables to IR303 LCD display via SP of 8 AO blocks.

When a default is executed on the **IR303**, the mnemonics of the 8 variables on the LCD display are configured on PV_01 a PV_08. These mnemonics can be configured via EDDL and FDT/DTM-based tools. The parameters shown on the display are the AO block setpoints, relative index 09 and sub index 2. By navigating on the local adjustment tree the user will notice that the **IR303** has the following default configuration:

CONF: LCD1, BLK: AO_1, PRMT: 9, ITEM:2
LCD2, BLK: AO_2, PRMT: 9, ITEM:2
LCD3, BLK: AO_3, PRMT: 9, ITEM:2
LCD4, BLK: AO_4, PRMT: 9, ITEM:2
LCD5, BLK: AO_5, PRMT: 9, ITEM:2
LCD6, BLK: AO_6, PRMT: 9, ITEM:2
LCD7, BLK: AO_7, PRMT: 9, ITEM:2
LCD8, BLK: AO_8, PRMT: 9, ITEM:2
TGGL:8

For details on local adjustment, see the Profibus general manual.

Local Adjustment

When monitoring, the IR303 has 8 SetPoints (SP) configured from the 8 AO blocks (Analog Output blocks). Since up to 8 variable+ status can be monitored, its local adjustment tree – however having the same functionality and configuration features as the Smar 303 line – presents the 8 configurable parameters, whose PV_01 a PV_08 are the values+status received cyclically on the Analog Output SPs through the PROFIBUS-DP master, as shown on the figure below. These mnemonics are default and can be altered by the user via EDDL and FDT/DTM tools.

The parameters displayed are the AO block SetPoints, relative index 9 and sub index 2. By navigating on the local adjustment tree, the user will notice that the **IR303** has the following default configuration:

CONF: LCD1, BLK: AO_1, PRMT: 9, ITEM:2
LCD2, BLK: AO_2, PRMT: 9, ITEM:2
LCD3, BLK: AO_3, PRMT: 9, ITEM:2
LCD4, BLK: AO_4, PRMT: 9, ITEM:2
LCD5, BLK: AO_5, PRMT: 9, ITEM:2
LCD6, BLK: AO_6, PRMT: 9, ITEM:2
LCD7, BLK: AO_7, PRMT: 9, ITEM:2
LCD8, BLK: AO_8, PRMT: 9, ITEM:2
TGGL:8

To get more details and information on local adjustment configuration, see the Profibus General Manual.
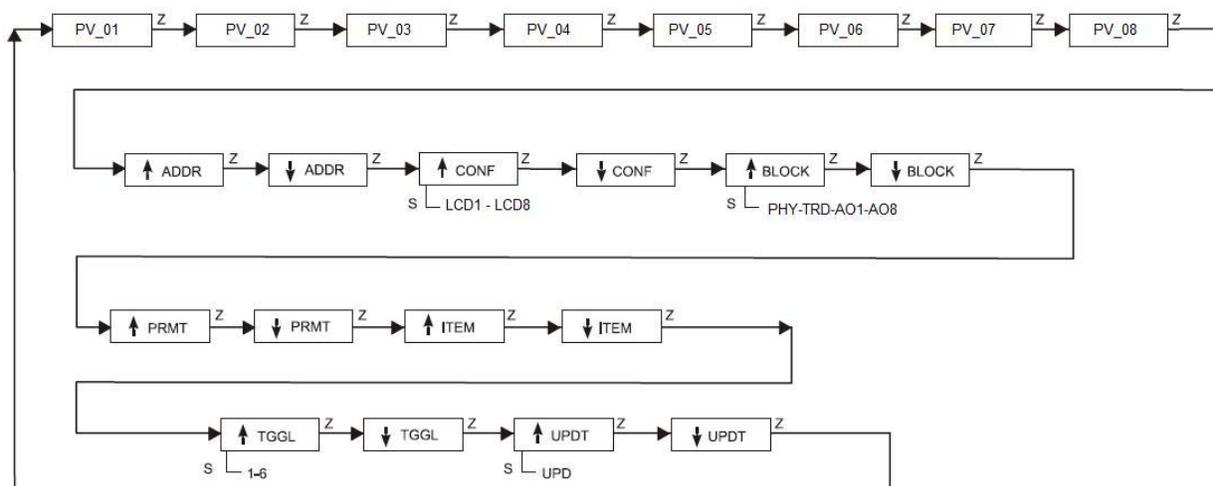
Figure 3.2 – Local adjustment tree

Examples of Applications

The applications for the **IR303** are well diversified, as through 8 input variables it allows monitoring and switching until 8 different cyclic variables or even up to 8 different devices on the LCD display via cyclic communication with any PROFIBUS-DP master. The user does not need to check the device condition personally on the field or at a tank upper level, or even in a hazardous area. See some examples:

IR303 application with the TT383 and other device available on the Profibus network

IR303 application with several devices connected to the PROFIBUS-PA and PROFIBUS-DP networks. For example, the IR383 can be configured to receive the temperature monitored by the TT303 or other information from multiple devices available on the Profibus network.
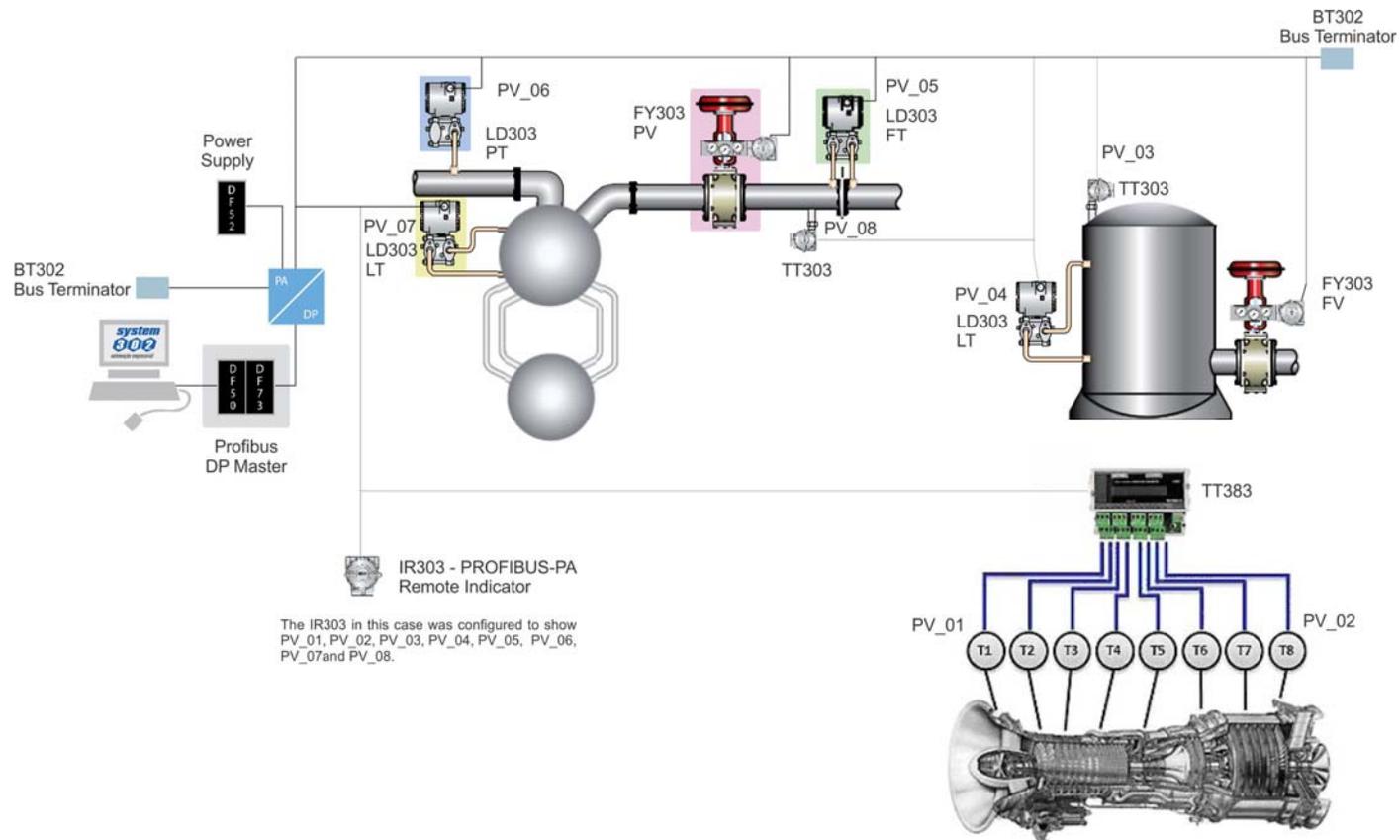
Figure 3.3 - IR303 application with the TT383 and other devices available on the Profibus network

IR303 application for devices without display

For example, the IDT303 is a device without LCD display. The **IR303** can be installed for inspection and facilitate the reading conditions of the process device.
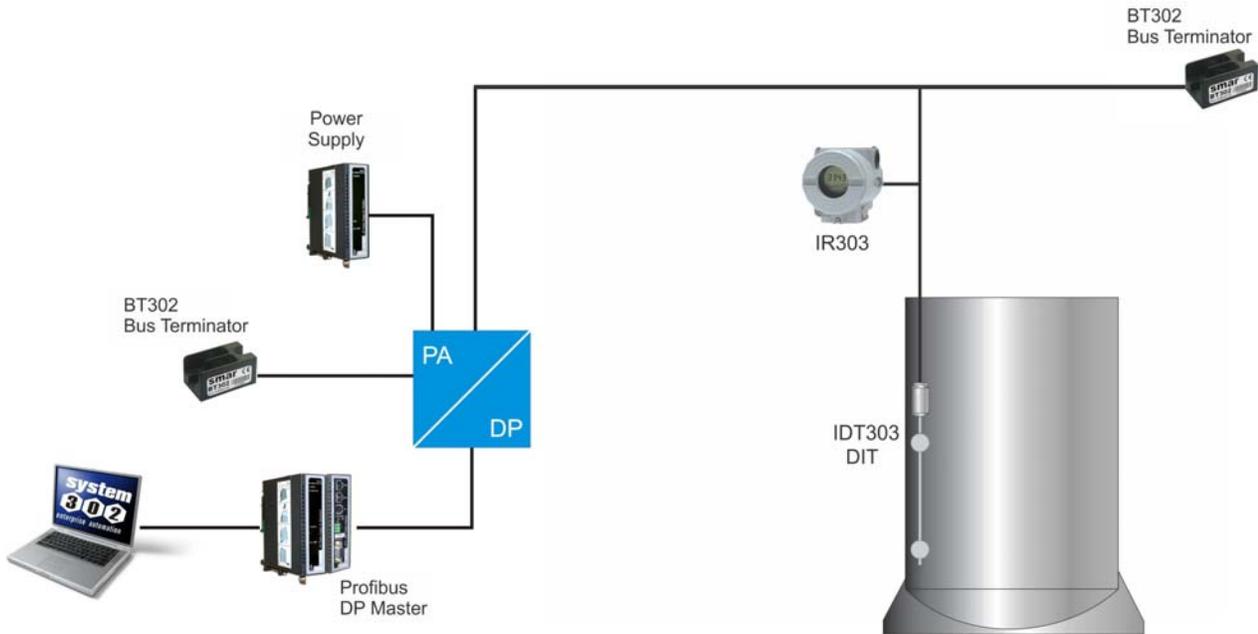
Figure 3.4 – IR303 application for devices without display

IR303 application with devices installed in difficult-access sites

If the device is installed at a location difficult to access, the **IR303** can be used to check its operation conditions and eliminates the need for the technician to inspect the device on site. At a safe place, the **IR303** minimizes the effort of technical inspections on hazardous areas, as shown on figure B, and in addition avoids the user presence.

(A)
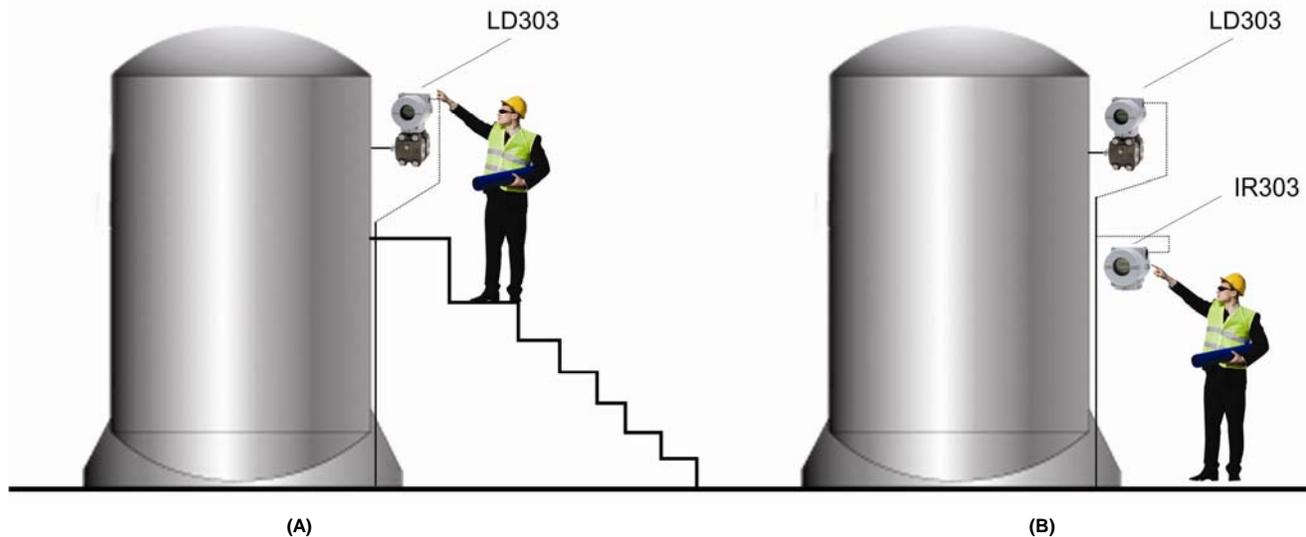
In some situations, the monitoring process by the user is hampered by the difficult access to the device.

(B)

The **IR303** increases the user´s visibility, making the monitored variables easy to access.

Figure 3.5 – IR303 applied on devices at difficult-access locations

Configuring the IR303 cyclically

The PROFIBUS-DP and PROFIBUS-PA protocols have mechanisms against failures and communication errors between the network device and the master. For example, when initializing the device these mechanisms are used to check these possible errors. After powering up the (slave) field device data can be exchanged cyclically with the class 1 master, if the slave parameterization is correct. The information is obtained through the GSD files (descriptions supplied by the device manufacturers). Through the commands below, the master executes the entire initialization process with the PROFIBUS-PA device:

- Get_Cfg: loads the slave configuration on the master and checks the network configurations;

- Set_Prm: writes on the slave parameters and executes the network parameterization services;

- Set_Cfg: configures the slaves according to the inputs and outputs;

- Get_Cfg: another command, where the master checks the slave configuration.

All services are based on the information obtained from the slave GSD files. The IR303 GSD file shows details for the hardware and software revision, device bus timing and information on the cyclic data exchange.

To access the complete Smar GSD library, consult: http://www.smar.com.br

The **IR303** has 8 Analog Output (AO) function blocks. It also has the empty module for applications that configure only a few parameters on the LCD display, a total of 8. The following block cyclic order must be followed: AO_1, AO_2...AO_7, AO_8. This means that what the master writes on AO_1 will appear on the first display, on A0_2, on the second display and so on, until AO_8 on the eight display.

Supposing you want to monitor 4 parameters on the **IR303** display, configure them as: AO_1, AO_2, AO_3, AO_4, EMPTY_MODULE, EMPTY_MODULE, EMPTY_MODULE, EMPTY_MODULE, in other words, for each display without function include an empty module on the cyclic configuration.

Most PROFIBUS configurators use two directories which should have the GSD and BITMAP files from all manufacturers. For Smar device, these files can be downloaded via Internet on (https://www.smar.com).

The next example shows the necessary steps to integrate the IR303 on a PA system. These steps are valid for all Smar 303 line devices:

- Copy the **IR303** gsd file on the PROFIBUS configurator research directory, normally called GSD;

- Copy the **IR303** bitmap file on the PROFIBUS configurator research directory, normally called BMP;

- After choosing the master, define the communication rate. Don´t forget that the couplers may have the following communication rates. 45.45 kbits/s (Siemens), 93.75 kbits/s (P+F) and 12Mbits/s (P+F, SK3). The IM157 link device may have up to 12Mbits/s;

- Add the **IR303** and specify its bus address;

- Choose the cyclic configuration via parameterization with the GSD file, depending on the application, as seen before. For each AO block the **IR303** gets from de master the variable float variable value and an additional status byte that supplies the information on the quality of this value.

For each AO block, one of the cyclic options below can be chosen:

```
;Empty module
Module   = "EMPTY_MODULE"  0x00
EndModule
```

```
;Modules for Analog Output
```

```
Module    = "eSP "            \
0x82, 0x84, 0x08, 0x05
EndModule
Module    = " SP "            \
0xA4
EndModule
```

- It enables the watchdog condition that moves the device to a fail-safe condition when detecting a loss of communication between the slave and the master device.

NOTE
If the FIX flag is active on the display, the **IR303** is configured for the "Profile Specific" mode. When on "Manufacturer Specific", the Identifier Number is 0x0e10. As long as it is altered from Profile Specific to Manufacturer Specific, wait for 5 seconds to turn the device off so that the Identifier Number is updated on the communication level. If the device is on Profile Specific and the GSD file is using an Identifier Number equal to 0x0e10, there will be an acyclic communication with the PROFIBUS-DP master. When on Profile Specific, the **IR303** responds with the Identifier Number equal to 0x9717.

Status exhibited on the LCD display

The **IR303** has 8 Analog Output (AO) blocks that receive via SetPoint (SP) the 8 variable+status that will he LCD. The following status will be shown:
- UNC (uncertain) when the status is on the 0x40 to 0x7f range;
- BAD when the status is on the 0x00 to 0x3f range;
- When GOOD, higher or equal to 0x80, no message is exhibited.

Section 4

MAINTENANCE PROCEDURES

General

IR303 is extensively tested and inspected before delivery to the end user. Nevertheless, during their design and development, consideration was given to the possibility of repairs being made by the end user, if necessary.

In general, it is recommended that end users do not try repair printed circuit boards. Spare circuit boards may be ordered from SMAR whenever necessary. Refer to the item "Returning Materials" at the end of this Manual.

TROUBLESHOOTING	
SYMPTOM	**PROBABLE SOURCE OF PROBLEM**
NO QUIESCENT CURRENT	**Power Supply:** The voltage at the **IR303** PROFIBUS-PA terminals must be between 9 and 32 Vdc. **Electronic Circuit Failure:** Check the boards for defects by replacing them with spare ones.
NO COMMUNICATION	**Network Connections** Check the network connections: devices, power supply, and terminators. **Network Impedance** Check the network impedance (power supply impedance and terminators). **Controller Configuration** Check configuration of communication parameters of the controller. **Network Configuration** Check communication configuration of the network. **Electronic Circuit Failure** Check the boards for defects by replacing them with spare ones.

Disassembly Procedure

NOTE
Make sure to disconnect the power supply before disassembling the **IR303.**

The Figure 4.2 – Exploded View an exploded view of the **IR303** and will help to visualize the following.

WARNING
The boards have CMOS components, which may be damaged by electrostatic discharges. Observe correct procedures for handling CMOS components. It is also recommended to store the circuit boards in electrostatic-proof cases.

Reassemble Procedure

- Place the main board (**5**) into the housing, ensuring all inter connecting pins are connected;

- Place the LCD display (**4**) into the housing, note the four mounting positions. "_" should point in the direction desired as UP.
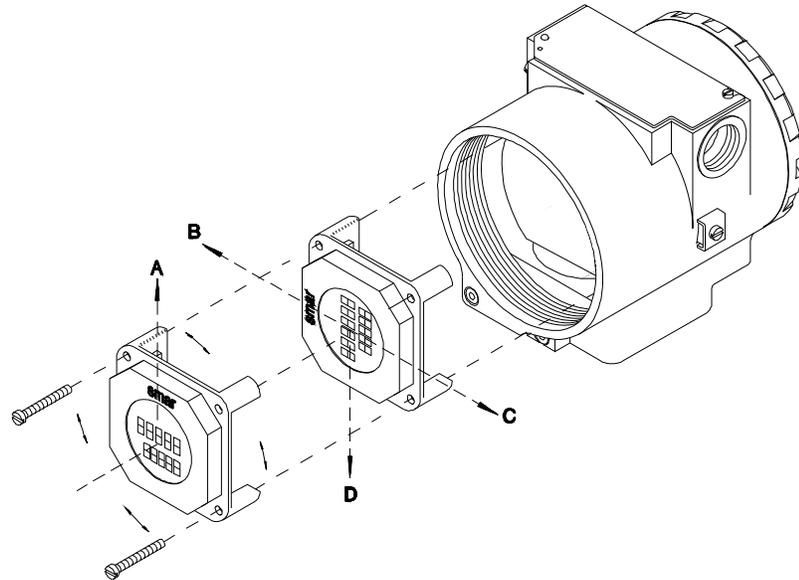
Figure 4.1 - Four Possible Positions of the Display

- Anchor main board and display with their screws (**3**);

- Fit the cover (**1** and **12**) and lock it using the locking screw (**6**).

Firmware Update Procedure

For firmware update of the **IR303** device see FDI302-1 manual, visit website Smar: www.smar.com .

Accessories

ACCESSORIES	
ORDERING CODE	**DESCRIPTION**
PBI-PLUS	USB Interface for PROFIBUS PA.
SYSCON	System Configuration Tool.
PS302	Power Supply.
BT302	Terminator.
FDI302-1	Fieldbus/PROFIBUS-PA Communication Interface for Firmware Update.
DF47	Intrinsic Safety Barrier for Fieldbus.

Exploded View

Figure 4.2 – IR303 Exploded View

Spare Parts

SPARE PARTS			
DESCRIPTION	**POSITION (FIGURE 4.2)**	**CODE**	**CATEGORY (NOTE 3)**
HOUSING (**NOTE 2**)	7	(**NOTE 1**)	
COVER (INCLUDES O'RING)			
Aluminum	12	204-0102	
316 SS	12	204-0105	
COVER WITH WINDOW FOR INDICATION (INCLUDES O'RING)			
Aluminum	1	204-0103	
316 SS	1	204-0106	
O'RINGS (**NOTE 4**)			
Cover, Buna-N	2	204-0122	B
MAIN BOARD SCREW HOUSING			
Housing in Aluminum	3	304-0118	
Housing in 316 Stainless Steel	3	204-0118	
TERMINAL HOLDING SCREW			
Housing in Aluminum	11	304-0119	
Housing in 316 Stainless Steel	11	204-0119	

SPARE PARTS			
DESCRIPTION	**POSITION (FIGURE 4.2)**	**CODE**	**CATEGORY (NOTE 3)**
EXTERNAL GROUND SCREW	13	204-0124	
DIGITAL INDICATOR	4	214-0108	
MAIN ELECTRONIC CIRCUIT BOARD	5	400-1235	A
COVER LOCKING SCREW	6	204-0120	
LOCAL ADJUSTMENT PROTECTION CAP (packaged in packs of 6 units)	8	204-0114	
IDENTIFICATION PLATE FIXING SCREW	9	204-0116	
TERMINAL INSULATOR	10	400-0059	
PLUG			
1/2 NPT Internal Hexagon Plug in Plated CS (Ex d)	14	400-0808	
1/2 NPT Internal Hexagon Plug in 304 SST (Ex d)	14	400-0809	
M20 X 1.5 External Hexagon Plug in 316 SST (Ex d)	14	400-0810	
PG 13.5 External Hexagon Plug in 316 SST (Ex d)	14	400-0811	
1/2 NPT Internal Socket Set Plug in Plated CS	14	400-0583-11	
1/2 NPT Internal Socket Set Plug in 304 SST	14	400-0583-12	
ADAPTER FOR ELECTRIC CONNECTION			
3/4 NPT female for 1/2 NPT male, SST 316	14	400-0812	
MOUNTING BRACKET FOR 2" PIPE MOUNTING (NOTE 5)			
Carbon Steel	-	214-0801	
Stainless Steel 316	-	214-0802	
Carbon Steel with bolts, nuts, washers and U-clamp in 316SS	-	214-0803	

NOTE
1) To specify housings, use the tables ORDERING CODE FOR THE HOUSING.
2) Includes Terminal Block, Bolts, caps and Identification plate without certification.
3) For category A, it is recommended to keep, in stock, 25 parts installed for each set, and for category B, 50.
4) O'Rings are packaged in packs of 12 units.
5) Including U-clamp, nuts, bolts and washers.

ORDERING CODE FOR THE HOUSING	
400-1234	**HOUSING; IR303**
	CODE **Electrical Connections**
	0 ½ - 14 NPT
	A M20 X 1.5
	B PG 13.5 DIN
	CODE **Housing**
	H0 Aluminum (IP/TYPE)
	H1 316 SST (IP/TYPE)
	CODE **Painting**
	P0 Gray Munsell N 6.5 Polyester
	P3 Black Polyester
	P4 White Epoxy
	P5 Yellow Polyester
	P8 Without Painting
	P9 Blue Safety Epoxy – Electrostatic Painting
	PC Blue Safety Polyesters – Electrostatic Painting
400-1234 * * *	**TYPICAL MODEL NUMBER**

* Select item.

TECHNICAL SPECIFICATIONS

General

Communication	Digital only. PROFIBUS-PA, 31.25 Kbits/s voltage mode, according to IEC 61158-2.
Current consumption quiescent	12 mA from PROFIBUS-PA network.
Turn-on Time	Approximately 10 seconds.
Humidity Limits	0 to 100% RH.
Indication	Optional 4½ digit LCD indicator.
Temperature Limits	Operation: -40 to 85ºC (-40 to 185 ºF).
	Storage: -40 to 120ºC (-40 to 250 ºF).
	Display: -10 to 60ºC (14 to 140ºF) operation;
	-40 to 85ºC (-40 to 185 ºF) without damage.
Vibration Effect	Meets SAMA PMC 31.1.
Electro-Magnetic Interference Effect	Designed to comply with IEC 801.
Hardware	Physical: according to IEC 61158-2 and conformity with the FISCO model.
Electrical Connection	1/2-14 NPT, PG 13.5 or M20 x 1.5.
Material of Construction	Injected low copper aluminum with polyester painting or 316 Stainless Steel housing, with Buna N O-rings on cover (NEMA 4X, IP67).
Mounting	With an optional bracket that can be installed on a 2" pipe or fixed on a wall or panel.
Weight	Without mounting bracket: 0.93 kg

Ordering Code

MODEL					
IR303	**PROFIBUS-PA REMOTE INDICATOR**				
	COD	**Local Indicator**			
	1	With Digital Indicator			
		COD.	**Mounting Bracket for 2" Pipe Mounting**		
		0	Without Bracket		
		1	Carbon Steel Bracket		
		2	316 SST Bracket		
			COD.	**Electrical Connections**	
			0	1/2-14 NPT	
			A	M20 x 1.5	
			B	PG 13.5 DIN	
				COD.	**Options**
				H0	Housing - Aluminum (IP/TYPE)
				H1	Housing - 316 SST (IP/TYPE)
				A1	316 SST Bolts
				ZZ	Special Options – Specify

IR303	-	1	1	0	/	∗	TYPICAL MODEL

∗ Leave it blank for no optional items

Appendix A

<table>
<tr>
<td rowspan="2">smar</td>
<td colspan="1" style="text-align:center"><h2>SRF – SERVICE REQUEST FORM</h2></td>
</tr>
<tr>
<td style="text-align:center">PROFIBUS-PA Remote Indicator</td>
</tr>
</table>

GENERAL DATA

Model: IR303

Serial Number: _____

TAG: _____

Configuration: PC ( )   Software: _____   Version: _____

INSTALLATION DATA AND ENVIRONMENT

Hazardous Area Classification: ( ) Yes, please specify: _____

( ) No

More details:__ _____

Interference types present in the area: No interference ( )   Temperature ( )   Vibration ( )   Other: _____

Environment Temperature: From _____ºC up to _____ºC.

OCCURRENCE DESCRIPTION

_____

_____

_____

_____

_____

SERVICE SUGGESTION

Adjustment ( )   Cleaning ( )   Preventive Maintenance ( )   Update / Up-grade ( )

Other: _____

USER INFORMATION

Company: _____

Contact: _____

Title: _____

Section: _____

Phone: _____ _____ _____ _____   **Extension:** _____

E-mail: _____   **Date:** _____/ _____/ _____

For warranty or non-warranty repair, please contact your representative.
Further information about address and contacts can be found on www.smar.com/contactus.asp.

Returning Materials

If necessary to return the **IR303** to SMAR, simply contact our office, informing the defective instrument serial number, and return it to our factory.

In order to speed up analysis and solution of the problem, the defective item should be returned with a description of the failure observed, with as much details as possible. Other information concerning the instrument operation, such as service and process conditions, is also helpful.

Instruments returned or to be revised outside the guarantee term should be accompanied by a purchase order or a quote request.

Appendix B

SMAR WARRANTY CERTIFICATE

1. SMAR guarantees the equipment of its own manufacture for a period of 24 (twenty four) months, starting on the day the invoice is issued. The guarantee is effective regardless of the day the product was installed. Third-party equipment and software are not included in this Term of Guarantee and Smar does not offer any guarantee or declaration in the name of the manufacturer. Any guarantees related to these products are the supplier or licenser responsibility.

2. SMAR products are guaranteed against any defect originating from manufacturing, mounting, whether of a material or manpower nature, provided that the technical analysis reveals the existence of a quality failure liable to be classified under the meaning of the word, duly verified by the technical team within the warranty terms.

3. Exceptions are proven cases of inappropriate use, wrong handling or lack of basic maintenance compliant to the equipment manual provisions. SMAR does not guarantee any defect or damage caused by an uncontrolled situation, including but not limited to negligence, user imprudence or negligence, natural forces, wars or civil unrest, accidents, inadequate transportation or packaging due to the user's responsibility, defects caused by fire, theft or stray shipment, improper electric voltage or power source connection, electric surges, violations, modifications not described on the instructions manual, and/or if the serial number was altered or removed, substitution of parts, adjustments or repairs carried out by non-authorized personnel; inappropriate product use and/or application that cause corrosion, risks or deformation on the product, damages on parts or components, inadequate cleaning with incompatible chemical products, solvent and abrasive products incompatible with construction materials, chemical or electrolytic influences, parts and components susceptible to decay from regular use, use of equipment beyond operational limits (temperature, humidity, etc.) according to the instructions manual. In addition, this Warranty Certificate excludes expenses with transportation, freight, insurance, all of which are the customer's responsibility.

4. For warranty or non-warranty repair, please contact your representative.

    Further information about address and contacts can be found on www.smar.com/contactus.asp

5.   In cases needing technical assistance at the customer's facilities during the warranty period, the hours effectively worked will not be billed, although SMAR shall be reimbursed from the service technician's transportation, meals and lodging expenses, as well dismounting/mounting costs, if any.

6.   The repair and/or substitution of defective parts do not extend, under any circumstance, the original warranty term, unless this extension is granted and communicated in writing by SMAR.

7.   No Collaborator, Representative or any third party has the right, on SMAR's behalf, to grant warranty or assume some responsibility for SMAR products. If any warranty would be granted or assumed without SMAR's written consent, it will be declared void beforehand.

8.   Cases of Extended Warranty acquisition must be negotiated with and documented by SMAR.

9.   If necessary to return the equipment or product for repair or analysis, contact us.
    See item 4.

10. In cases of repair or analysis, the customer must fill out the Revision Requisition Form (FSR) included in the instructions manual, which contains details on the failure observed on the field, the circumstances it occurred, in addition to information on the installation site and process conditions. Equipments and products excluded from the warranty clauses must be approved by the client prior to the service execution.

11. In cases of repairs, the client shall be responsible for the proper product packaging and SMAR will not cover any damage occurred in shipment.

12. In cases of repairs under warranty, recall or outside warranty, the client is responsible for the correct packaging and packing and SMAR shall not cover any damage caused during transportation. Service expenses or any costs related to installing and uninstalling the product are the client´s sole responsibility and SMAR does not assume any accountability before the buyer.

13. It is the customer's responsibility to clean and decontaminate products and accessories prior to shipping them for repair, and SMAR and its dealer reserve themselves the right to refuse the service in cases not compliant to those conditions. It is the customer's responsibility to tell SMAR and its dealer when the product was utilized in applications that contaminate the equipment with harmful products during its handling and repair. Any other damages, consequences, indemnity claims, expenses and other costs caused by the lack of decontamination will be attributed to the client. Kindly, fill out the Declaration of Decontamination prior to shipping products to SMAR or its dealers, which can be accessed at www.smar.com/doc/declarationofcontamination.pdf and include in the packaging.

14. This warranty certificate is valid only when accompanying the purchase invoice.