Binks®

PROGRAMMING MANUAL EN

77-3165-5

Binks

IntelliFlow™ RF2+

For additional information or copies of your IntelliFlow RF2+ service manual, please visit us online at:

binks.com/en/library

Or use this QR code with your mobile device:

RF2+

Obey local or municipal regulations for product recycling and disposal.

ABOUT THIS MANUAL

ITS PURPOSE

The purpose of this manual is to help you get the most value from your RF2+. This manual can help you determine how to install, operate, maintain, and repair your equipment. It provides information and procedures for routine maintenance and servicing and offers diagnostic and repair procedures to follow when trouble occurs.

ITS CONTENTS

This manual is divided into Chapters, each of which is divided into consecutively numbered Sections.

Chapters will contain text, images, tables, or a combination of them.

Pages with images will have paragraphs and sentences with callout numbers that refer to their respective images, steps, and parts.

Procedures, once described in the text, are not normally repeated. When it is necessary to refer to another Chapter or Section, the reference will be given as Chapter and Section number. Cross references given without the use of the word "Chapter" apply to Sections or paragraphs in the current Chapter.

WHO SHOULD USE THIS GUIDE

This guide is intended for users with different levels of knowledge and experience with this system:

Installers: The person(s) who will locate and install this equipment.

Users: The person(s) who will learn how to operate this equipment.

Servicers: The person(s) who will service and maintain this equipment.

This guide assumes all persons who will install, use, operate, and service this equipment have some knowledge of the product and its operating system.

For information on the installation of this equipment, refer to RF2+ Installation Manual 77-3165-1.

For information on the operation of this equipment, refer to RF2+ Operation Manual 77-3165-2.

For information on the servicing and repair of this equipment, refer to RF2+ Service Guide 77-3165-3.

For information on accessory kits and spare parts of this equipment, refer to RF2+ Kit Instructions & Spare Parts Manual 77-3165-4.

For programming information of this equipment, refer to RF2+ Programming Manual 77-3165-5.

MANUAL DISCLAIMER

All current and applicable certifications shown in this manual confirm Binks' adherence to the strict standards met to obtain the required regulatory compliances.

This manual was prepared with the most accurate information current at the time of publishing. Binks does not accept responsibility for errors in, or omissions from, the information contained herein.

Please get in touch with your distributor or Binks Customer Service for additional service information and assistance.

RF2+ RELATED MANUALS & PUBLICATIONS	
Part Number	Description
77-3154	Flow Meter Kit
77-3155	Remove Fluid Panel Kit–Barrier and F.O. Transceiver Box
77-3156	Flow Meter Sensor Battery Replacement Kit
77-3157	Flow Sensor Kit
77-3158	240-5203 Remote Color Change Kit for RM2 and RF2 manual
77-3159	Touchscreen Protector Kit
77-3160	Flush Box Kit
77-3164	Flow Meter Replacement Head Kit
77-3165-1	RF2+ Installation Manual
77-3165-2	RF2+ Operation Manual
77-3165-3	RF2+ Service Guide
77-3165-4	RF2+ Kit Instructions and Spare Parts
LN-9112-00	Weeping MVR Service Guide
LN-9225-00	Weepless Service Guide

02. CONTENTS

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03 DECLARATION OF CONFORMITY

Product Description / Object of Declaration:	**IntelliFlow RF2+**
This Product is designed for use with:	**Solvent & Waterbased Materials**
Suitable for use in hazardous area:	
Protection Level:	**Not Applicable**
Notified Body and/or Nationally Recognized Testing Laboratory details and role:	**TUV SUD America Inc, 141 14th St NW, New Brighton, MN 55112 USA. Nos NC721005768.1, NC721003844.1, Cert No. U8 113140 0001 IEC Cert No. DE 3 - 32523**
	Low Voltage and EMC Assessment
This Declaration of Conformity / Incorporation is issued under the sole responsibility of the manufacturer:	**Binks US LLC. 3760 Victoria St N Shoreview, MN 55126. USA**
Representative authorised to compile the technical file	**President @. Binks France SAS 5 Place Pierre Semard, 94130 Nogent sur Marne , Paris, France**

EU Declaration of Conformity

CE

This Declaration of Conformity / Incorporation is issued under the sole responsibility of the manufacturer:

Machinery Directive 2006/42/EC
EMC Directive 2014/30/EU
Low Voltage Directive 2014/35/EU
RoHS Directive 2011/65/EU
by complying with the following statutory documents and harmonised standards:
EN 60204-1:2018 Safety of Machinery. Electrical equipment of machines
BS EN 61000-3-2:2014 Electromagnetic compatibility (EMC) - Limits - Limits for harmonic current emissions
BS EN 61000-3-3:2013 Electromagnetic compatibility (EMC) - Limits - Limitation for voltage changes, voltage fluctuations, and flicker in public low-voltage supply systems
EN 61000-6-2:2005/AC:2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4:2007/A1:2011 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments.
UL 61010-1:2012 Ed.3+R:2019/CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements
KS C 9610-6-2:2019 EMC Immunity Testing of Industrial Environments
KS C 9610-6-4:2017 EMC Emission Testing of Industrial Environments
EN 63000: 2018 Technical documentation for the assessment according to REACH
IEC 61010-1:2010+AMD1:2016 Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements.
IEC 61010-2-051:2018 Safety requirements for electrical equipment for measurement, control and laboratory use. Particular requirements for laboratory equipment for mixing and stirring
FCC 47 CFR Part 15-Radio Frequency Devices, Subpart B – Unintentional Radiators
ICES-001, Issue 5:2020 Class A Industrial, Scientific, and Medical (ISM) Equipment

Providing all conditions of safe use / installation stated within the product manuals have been complied with and also installed in accordance with any applicable local codes of practice.

Signed for and on behalf of Binks US LLC:	F. A. Sutter	Executive President: Engineering and Operations, Shoreview, MN, 55126. USA
Document Part No. EN	15-4-25	

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04 SAFETY

04.1 SAFETY PRECAUTIONS

Before the operation, maintenance, or servicing of this Binks system; fully read and understand all technical and safety literature for your product. This manual contains information that is important for you to know and understand.

This information relates to USER SAFETY and the PREVENTION OF EQUIPMENT PROBLEMS.

To help you understand this information, we use recognizable ANSI Z535 and ISO warning boxes and symbols throughout this manual. Please obey these safety sections.

⚠ DANGER

DANGER!: Indicates a hazardous situation that, if not avoided, will result in death or severe injury.

⚠ WARNING

WARNING!: Indicates a hazardous situation that, if not avoided, could result in death or severe injury.

⚠ CAUTION

Caution!: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury, or equipment damage.

NOTICE

Notice: Indicates information considered important but not hazard related.

SAFETY

Safety: Indicates a type of safety instruction, or a separate panel on a safety placard, where specific safety-related instructions or procedures are described.

Careful study and continued use of this manual will provide a better understanding of the equipment functions and procedures.

This understanding will result in improved operation, efficiency, and longer, trouble-free service with faster and easier troubleshooting. If you need the necessary safety literature for your specific system, contact your local Binks representative or Binks directly.

NOTICE

This manual lists standard specifications and service procedures. Differences can occur between this literature and your equipment.

Differences in local or municipal codes, manufacturer or plant requirements, material delivery requirements, and more can make variations unpreventable. To find these differences, compare this manual to your system installation drawings and other applicable Binks equipment manuals.

⚠ WARNING

The user MUST read and be familiar with the Safety Section in this manual and the safety literature therein identified.

Only trained personnel can operate this equipment.

All personnel who operate, clean, or maintain this equipment MUST fully read and understand this manual! To operate and service the equipment, follow all WARNINGS and safety requirements.

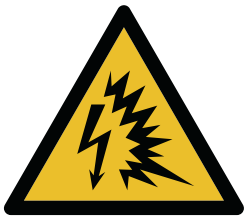
The user must be aware of and adhere to ALL local building and fire codes and ordinances, as well as NFPA 33 AND EN 16985 SAFETY STANDARDS, LATEST EDITION, or applicable country safety standards, before the installation, operation, or servicing of this equipment.

⚠ WARNING

The hazards shown on the pages that follow can occur during the normal use of this Binks equipment, but not all listed hazards will be applicable to your product model or equipment.

Repairs may only be performed by personnel authorized by Binks.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas  	**Fire Hazards** Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary	Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Keep spray areas clean to prevent the build-up of combustible residues. Do not smoke in the spray area. The high voltage supplied to the atomizer must be turned off before the equipment is cleaned, flushed or maintained. Spray booth ventilation must be kept at the rates as set by NFPA-33, OSHA, country, local, and municipal codes. If flammable or combustible solvents are used to clean the equipment, ventilate the area. Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of the output voltage is necessary. Do an equipment test only in areas free of combustible material. The test may necessitate the high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications can cause a fire or injury. The key switch bypass is used only during setup operation. Do no production work with disabled safety interlocks. Set up and operate the paint procedure and equipment under NFPA-33, NEC, OSHA, local, municipal, country, and European Health and Safety Norms.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas  	**Explosion Hazard** Improper or unsatisfactory operation and maintenance procedures will cause a fire or explosion hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary.	Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of output voltage is necessary. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. If equipped, set the current overload sensitivity as described in the related section of the equipment manual. If incorrectly set, the current overload sensitivity for protection against accidental arcing is turned off and can cause a fire or explosion. Frequent power supply shutdown indicates a problem in the system, which requires correction. Always turn off the control panel power before the system is flushed, cleaned, or servicing the spray system equipment. Make sure no objects are within the spark-safe work distance before the high voltage is turned on. The control panel must interlock with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Do an equipment test only in areas free of combustible material.
General Use and Maintenance 	Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. Personnel must be correctly trained in the operation and maintenance of this equipment.	Train all personnel in accordance with the requirements of NFPA-33, EN 60079-0. Before equipment operation, personnel must read and understand these instructions and safety precautions. Obey appropriate local, municipal, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms, and your insurance company requirements.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Area High Voltage Equipment    	**Electrical Discharge** This equipment contains a high-voltage device that can cause an electrostatic induction on ungrounded objects. This electrical charge is capable of igniting coating materials. Insufficient ground will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Operators in the spray area and the parts to be sprayed must be sufficiently grounded. All conductive objects inside the spray area must be grounded. Hold the parts that get sprayed on conveyors or hangers that are correctly grounded. The resistance between the parts and the earth-ground must not be more than 1 MΩ. Refer to: NFPA-33. Before the equipment is operated, ground all operators. They cannot wear rubber-soled insulated shoes. Wear ground straps on wrists or legs for sufficient ground contact. Operators must not wear or carry ungrounded metal objects. When used, operators must make complete contact with the applicator handle and electrostatic gun. Use conductive gloves or gloves with the palm section cut out. Operators must wear grounded footwear. **NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES FOR GUIDANCE TO CORRECTLY GROUND THE OPERATOR.** Except for objects needed for the high-voltage process, all electrically conductive objects in the spray area are to be grounded. Supply a grounded conductive floor in the spray area. Always turn off the applicator voltage before the system is flushed, cleaned, or when servicing the spray system equipment. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. Do not install an applicator into a fluid system if the solvent supply is ungrounded. Do not touch an energized applicator electrode.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas 	**Toxic Fluid or Fumes** Toxic fluids or fumes can cause severe injury or death if splashed in the eyes or on the skin, or if inhaled or swallowed.	Read the Safety Data Sheet (SDS) for instructions to know and understand how to handle the specific hazards of the fluids used, and the effects of long-term exposure. During the spray, clean, or servicing of equipment, or when in the work area, keep the work area fully ventilated. Always wear personal protective equipment (PPE) when in the work area or during equipment operation. Refer to the Personal Protective Equipment warnings in this manual. Store hazardous fluid in approved containers and refer to local, municipal, state, and national codes governing the disposal of hazardous fluids.
Spray Area and Equipment Use 	High-pressure fluid sprayed from the gun, hose fittings, or ruptured/damaged components can pierce the skin. While this injury can appear as cut skin, this is a severe injury that can result in the amputation of the affected area.	Do not point or operate the spray gun at the body part of a person. Do not put your hand or fingers over the gun fluid nozzle or fittings in the hose or Proportioner. Do not try to stop or deflect leaks with your hand, glove, body, or shop rag. Do not “blowback” fluid, as the equipment is not an air spray system. Relieve pressure in the supply hoses, Proportioner, and QuickHeat™ hose before the equipment is inspected, cleaned, or serviced. Use the lowest possible pressure to recirculate, purge, or troubleshoot the equipment. Examine the hoses, couplings, and fittings every day. Service or immediately replace parts that leak, are worn, or are damaged. Replace high-pressure hose sections. They cannot be recoupled or serviced.

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Equipment and Fluids 	**Skin and Clothing Burns** Equipment surfaces and fluids can become very hot during operation.	Do not touch hot fluid or equipment during operation. Do not let clothing touch the equipment during operation or immediately after the equipment is stopped. Let the equipment fully cool before the examination or servicing of the component.
Pressurized Aluminum Parts    	The use of certain solvents and chemicals can cause equipment damage and severe personal injury.	Do not use 1,1,1-trichloroethane, methylene chloride or other halogenated hydrocarbon solvents or fluids that contain such solvents. These solvents can cause a severe chemical reaction and equipment rupture that results in equipment and property damage, serious bodily injury, or death.

AREAS Indicate possible hazard occurrences.	**HAZARDS** Indicate possible hazards.	**SAFEGUARDS** Prevention of possible hazards.
Spray Areas 	**Do Not Touch** The effect of paint flow rates and formulations on the quality of atomization can cause the turbines to rotate at high speeds.	Do not use a rag or gloved hand against the bell edge to stop or slow down a bell during rotation. Do not try to clean the bell edge during rotation.

⚠ CAUTION

Only operate the equipment after you have read this section.

04.2 ADDITIONAL SAFETY INFORMATION

The IntelliFlow has an emergency stop (E-Stop) pushbutton on the main operator panel. During an emergency, all operations for the IntelliFlow will halt when the E-Stop is engaged. The operator must disengage the E-Stop and reset the system to recover from this state.

Observe all local safety measures and wear approved protective equipment when servicing this equipment. Clean all spilled chemicals and materials and do all work in a clean and organized environment to prevent personal injury and equipment damage.

⚠ DANGER

To prevent injury or electrocution while the system is under power, do not contact, disconnect, or manipulate electrical connections or devices. The main disconnect on the right side of the controller can be locked out. Follow the proper Lockout–Tagout (LOTO) procedures for internal controller electrical work.

Only qualified electrical personnel can perform the work if diagnosis and troubleshooting are not possible during working conditions.

⚠ WARNING

To prevent possible chemical spillage when personnel are not on site, air and fluid supplies for the equipment must be disabled when the equipment idles for an extended period, such as an end-of-day shutdown.

NOTICE

During the initial commission of the equipment and at periodic times throughout equipment life, visually examine all fluid fittings for leaks.

Periodically, it is necessary to visually examine all pieces of this equipment for signs of noticeable degradation due to chemicals or other conditions in the equipment's environment.

SAFETY

Obey local or municipal regulations that require installed fire suppression for equipment operation.

If the operation of this equipment, sensors, switches, or other ancillary equipment occurs in the presence of flammable gases and vapors, connect this equipment through intrinsic-safe or Zener barriers. Classify them as a 'simple apparatus' or approve them for use in these areas.

05 FIELDBUS I/O

05.1 FIELDBUS INTRODUCTION

The RF2+ can communicate via fieldbus through its RJ-45 Ethernet connector by way of an Anybus gateway. Various Anybus gateways are available to support connections to nearly any industrial automation protocol.

Signal lists and more detailed information to establish communications with the RF2+ are given at the end of this manual.

In access through Anybus gateway the communications protocol is converted from the customer's side to Ethernet/IP on the RF2+ side. Tag registers within the RF2+ are overwritten by the tags communicated through the gateway.

Binks can provide sample or importable code for Allen Bradley software solutions.

05.1.1 DATA ORGANIZATION

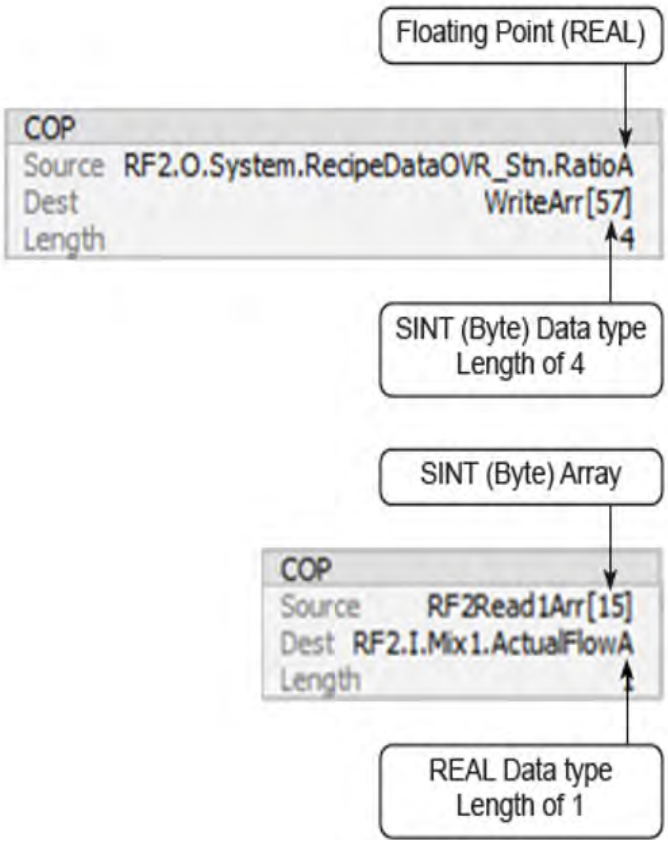
The base data type is signed integer (SINT) and occupies 1 byte of storage. Additional data types in the form of BOOL, integer (INT), double integer (DINT), or Floating Point (REAL) are represented by varying amounts of bytes. The code used in the master controller must take this into account. For example:

1. The example to the right copies a REAL into the memory space allocated to 4 SINT which is the base data type used to send the data.
2. The code to the right copies 4 bytes into a REAL value.

NOTICE

The examples shown are Allen Bradley software. Other PLC software can have different methods to accomplish data type conversions.

Communications Handshake: The RF2+ will fault if it detects a connection has been lost between its master controller and itself after communications have been established. It detects communications through a handshaking word, which increments after the master controller has echoed it. The master controller communicating must set its output byte #1 equal to its input byte #1 continuously.



05.2 COMMUNICATIONS VIA ANYBUS GATEWAY

The Anybus uses separate network interfaces to make this gateway connect implicitly to both networks and to transfer 496 bytes of input data and 496 bytes of output data between the networks. When this gateway is used, the arrays listed in Section 5.5 are mapped into the Anybus memory space.

The programming must be done on the customer's side to copy the data into the correct registers. The input and output sizes in the customer's network may be configured for less than 496 bytes where not all data is needed.

Refer to the manufacturers user manual for the model specific Anybus gateway for more information on how to program it.

05.3 ENABLING GATEWAY FIELDBUS COMMUNICATIONS: IP ADDRESS SETTING

When the Anybus communications gateway is installed in the system, it must first be enabled in the system configuration under the custom setup by checking the Anybus check box. Refer to the RF2+ Operation Manual (77-3165-2).

In most cases it is necessary to assign an IP address to the customer side of the Anybus gateway before communication is possible.

For more detailed information refer to the HMS IPconfig User Manual.

05.4 ENDIAN WARNING

The data may not be in the correct data format for your controller. The data is transmitted in little-endian format.

Refer to the documentation for your controller to determine if this is the correct format and, if necessary, how to convert the values to big-endian format.

05.5 USER TO RF2+

Communication inputs from the user to the RF2+ are listed on the pages that follow:

	USER TO RF2+		
Size Bytes	**Offset**	**Description**	**Type**
1	0	System Control Byte	BYTE
0	0.0	Fault Reset	BIT
1	1	Handshake Counter	USINT
12	2	Station Control Array	STRUCT
2	2	Station 1 Control Word	WORD
0	2.0	Station 1 Job Strobe	BIT
1	2.1	Station 1 Purge	BIT
3	2.3	Station 1 Sequence Run	BIT
4	2.4	Station 1 Sequence Select 1	BIT
5	2.5	Station 1 Sequence Select 2	BIT
6	2.6	Station 1 Sequence Select 4	BIT
7	2.7	Station 1 Sequence Select 8	BIT
9	2.9	Station 1 Start Pulse	BIT
10	2.10	Station 1 Stop Pulse	BIT
1	4	Station 1 Recipe Select	USINT
2	5	Station 2 Control Word	WORD
0	5.0	Station 2 Job Strobe	BIT
1	5.1	Station 2 Purge	BIT
3	5.3	Station 2 Sequence Run	BIT
4	5.4	Station 2 Sequence Select 1	BIT
5	5.5	Station 2 Sequence Select 2	BIT
6	5.6	Station 2 Sequence Select 4	BIT
7	5.7	Station 2 Sequence Select 8	BIT
9	5.9	Station 2 Start Pulse	BIT
10	5.10	Station 2 Stop Pulse	BIT
1	7	Station 2 Recipe Select	USINT
2	8	Station 3 Control Word	WORD
0	8.0	Station 3 Job Strobe	BIT
1	8.1	Station 3 Purge	BIT
3	8.3	Station 3 Sequence Run	BIT
4	8.4	Station 3 Sequence Select 1	BIT
5	8.5	Station 3 Sequence Select 2	BIT
6	8.6	Station 3 Sequence Select 4	BIT
7	8.7	Station 3 Sequence Select 8	BIT
9	8.9	Station 3 Start Pulse	BIT
10	10	Station 3 Stop Pulse	BIT

	USER TO RF2+		
Size Bytes	**Offset**	**Description**	**Type**
1	10	Station 3 Recipe Select	USINT
2	11	Station 4 Control Word	WORD
0	11.0	Station 4 Job Strobe	BIT
1	11.1	Station 4 Purge	BIT
3	11.3	Station 4 Sequence Run	BIT
4	11.4	Station 4 Sequence Select 1	BIT
5	11.5	Station 4 Sequence Select 2	BIT
6	11.6	Station 4 Sequence Select 4	BIT
7	11.7	Station 4 Sequence Select 8	BIT
9	11.9	Station 4 Start Pulse	BIT
10	11.10	Station 4 Stop Pulse	BIT
1	13	Station 4 Recipe Select	USINT
8	14	Spare	BYTE
24	22	Outlet Control Array	STRUCT
1	22	Outlet 1 Triggers	BYTE
0	22.0	Outlet 1 Trigger 1	BIT
1	22.1	Outlet 1 Trigger 2	BIT
2	22.2	Outlet 1 Trigger 3	BIT
3	22.3	Outlet 1 Trigger 4	BIT
2	23	Outlet 1 Flow Command CC/min	INT
1	25	Outlet 2 Triggers	BYTE
0	25.0	Outlet 2 Trigger 1	BIT
1	25.1	Outlet 2 Trigger 2	BIT
2	25.2	Outlet 2 Trigger 3	BIT
3	25.3	Outlet 2 Trigger 4	BIT
2	26	Outlet 2 Flow Command CC/min	INT
1	28	Outlet 3 Triggers	BYTE
0	28.0	Outlet 3 Trigger 1	BIT
1	28.1	Outlet 3 Trigger 2	BIT
2	28.2	Outlet 3 Trigger 3	BIT
3	28.3	Outlet 3 Trigger 4	BIT
2	29	Outlet 3 Flow Command CC/min	INT
1	31	Outlet 4 Triggers	BYTE
0	31.0	Outlet 4 Trigger 1	BIT
1	31.1	Outlet 4 Trigger 2	BIT
2	31.2	Outlet 4 Trigger 3	BIT
3	31.3	Outlet 4 Trigger 4	BIT

	USER TO RF2+		
Size Bytes	**Offset**	**Description**	**Type**
2	32	Outlet 4 Flow Command CC/min	INT
1	34	Outlet 5 Triggers	BYTE
0	34.0	Outlet 5 Trigger 1	BIT
1	34.1	Outlet 5 Trigger 2	BIT
2	34.2	Outlet 5 Trigger 3	BIT
3	34.3	Outlet 5 Trigger 4	BIT
2	35	Outlet 5 Flow Command CC/min	INT
1	37	Outlet 6 Triggers	BYTE
0	37.0	Outlet 6 Trigger 1	BIT
1	37.1	Outlet 6 Trigger 2	BIT
2	37.2	Outlet 6 Trigger 3	BIT
3	37.3	Outlet 6 Trigger 4	BIT
2	38	Outlet 6 Flow Command CC/min	INT
1	25	Outlet 7 Triggers	BYTE
0	40.0	Outlet 7 Trigger 1	BIT
1	40.1	Outlet 7 Trigger 2	BIT
2	40.2	Outlet 7 Trigger 3	BIT
3	40.3	Outlet 7 Trigger 4	BIT
2	41	Outlet 7 Flow Command CC/min	INT
1	43	Outlet 8 Triggers	BYTE
0	43.0	Outlet 8 Trigger 1	BIT
1	43.1	Outlet 8 Trigger 2	BIT
2	43.2	Outlet 8 Trigger 3	BIT
3	43.3	Outlet 8 Trigger 4	BIT
2	44	Outlet 8 Flow Command CC/min	INT
16	46	Spare	BYTE
3	62	Outlet Total Requests	STRUCT
1	62	Flow Totals Outlet Request	USINT
1	63	Flow Totals Recipe Request	USINT
1	64	Flow Totals Time Range Request	USINT
3	65	Spare	BYTE

	USER TO RF2+		
Size Bytes	**Offset**	**Description**	**Type**
24	68	Station Recipe Override	STRUCT
1	68	Station Select	USINT
1	69	Station Override Strobe	BOOL
1	70	Mat A Valve Override	USINT
1	71	Mat B Valve Override	USINT
1	72	Mat C Valve Override	USINT
2	73	Pot Life Override Minutes	UINT
2	75	Pot Life Warning Override Minutes	UINT
4	77	Ratio A Override	REAL
4	81	Ratio B Override	REAL
4	85	Ratio C Override	REAL
1	89	Purge A Sequence Override	USINT
1	90	Purge All Sequence Override	USINT
1	91	Load A Sequence Override	USINT
1	92	Load All Sequence Override	USINT
8	93	Spare	BYTE
20	101	Outlet Recipe Override	STRUCT
1	101	Outlet Select	USINT
1	102	Outlet Override Strobe	BOOL
2	103	Default Flow Override CC/Min	UINT
2	105	Max Flow Override CC/Min	UINT
2	107	Min Flow Override CC/Min	UINT
1	109	Ratio Tolerance Override %	USINT
2	110	Ratio Tolerance Volume Override CC	UINT
1	112	Flow Tolerance Override %	USINT
2	113	Flow Tolernace Time Override Sec	UINT
2	115	Trigger On Delay Override Millisec	UINT
2	117	Trigger Off Delay Override Millisec	UINT
2	119	Sequence High Flow Override CC/Min	UINT
2	121	MVR Hold Time Sec	UINT
6	123	Spare	BYTE
1	129	Channel Select	USINT
1	130	Channel Override Strobe	BOOL
4	131	Flow Meter Calibration PPL Override	DINT
4	135	Flow Kp Override	REAL

	USER TO RF2+		
Size Bytes	**Offset**	**Description**	**Type**
4	139	Flow Ki Override	REAL
4	143	Flow Kd Override	REAL
2	147	Inlet Pressure Override PSI	UINT
4	149	Inlet Pressure Kp Override not used on RF2	REAL
4	153	Inlet Pressure Ki Override not used on RF2	REAL
4	157	Inlet Pressure Kd Override not used on RF2	REAL
2	161	Min Inlet Pressure Override	UINT
2	163	Max Inlet Pressure Override	UINT
2	165	Min Control Pressure Override PSI	UINT
2	167	Max Control Pressure Override PSI	UINT
2	169	Foldback Pressure Override PSI	UINT
8	171	Passthrough inputs (64 solenoids)	BYTE

05.6 RF2+ TO USER EQUIPMENT

Communication inputs from the RF2+ to the user equipment are listed on the pages that follow:

	RF2+ TO USER EQUIPMENT		
Size Bytes	**Offset**	**Description**	**Type**
1	0	System Status	BYTE
	0.0	Communication Heart Beat	BIT
	0.1	Fault Exists	BIT
	0.2	Warning Exists	BIT
1	1	Handshake Counter	USINT
1	2	Station 1 Status Byte	BYTE
	2.0	Station 1 Run Mode (Byte 2. Bit 0]	BIT
	2.1	Station 1 Start Interlock (High = OK)	BIT
	2.2	Station 1 Sequence Interlock (High = OK)	BIT
	2.3	Station 1 Sequence Active	BIT
1	3	Station 1 Active Recipe	USINT
1	4	Station 1 Active Sequence	USINT
1	5	Spare	BYTE
1	6	Station 2 Status Byte	BYTE
	6.0	Station 2 Run Mode (Byte 2. Bit 0]	BIT
	6.1	Station 2 Start Interlock (High = OK)	BIT
	6.2	Station 2 Sequence Interlock (High = OK)	BIT
	6.3	Station 2 Sequence Active	BIT
1	7	Station 2 Active Recipe	USINT
1	8	Station 2 Active Sequence	USINT
1	9	Spare	BYTE
1	10	Station 3 Status Byte	BYTE
	10.0	Station 3 Run Mode (Byte 2. Bit 0]	BIT
	10.1	Station 3 Start Interlock (High = OK)	BIT
	10.2	Station 3 Sequence Interlock (High = OK)	BIT
	10.3	Station 3 Sequence Active	BIT
1	11	Station 3 Active Recipe	USINT
1	12	Station 3 Active Sequence	USINT
1	13	Spare	BYTE

	RF2+ TO USER EQUIPMENT		
Size Bytes	**Offset**	**Description**	**Type**
1	14	Station 4 Status Byte	BYTE
	14.0	Station 4 Run Mode (Byte 2. Bit 0]	BIT
	14.1	Station 4 Start Interlock (High = OK)	BIT
	14.2	Station 4 Sequence Interlock (High = OK)	BIT
	14.3	Station 4 Sequence Active	BIT
1	15	Station 4 Active Recipe	USINT
1	16	Station 4 Active Sequence	USINT
1	17	Spare	BYTE
1	18	Station ID	USINT
1	19	Purge A Sequence	USINT
1	20	Purge All Sequence	USINT
1	21	Load A Sequence	USINT
1	22	Load All Sequence	USINT
2	23	Material A CCV #	INT
2	25	Material B CCV #	INT
2	27	Material C CCV #	INT
4	29	Pot Life Time (Min x 10)	DINT
4	33	Pot Life Warning Time (Min x 10)	DINT
4	37	Ratio A	REAL
4	41	Ratio B	REAL
4	45	Ratio C	REAL
1	49	Outlet ID	USINT
1	50	Outlet Status Byte	BYTE
	50.0	Trigger 1	BIT
	50.1	Trigger 2	BIT
	50.2	Trigger 3	BIT
	50.3	Trigger 4	BIT
	50.5	Pot Life Expired	BIT
	50.6	Warning	BIT
	50.7	Shutdown Fault	BIT
4	51	Channel A Flow	REAL
4	55	Channel B Flow	REAL
4	59	Channel C Flow	REAL
4	63	Total Flow	REAL

	RF2+ TO USER EQUIPMENT		
Size Bytes	**Offset**	**Description**	**Type**
4	67	Actual Ratio A	REAL
4	71	Actual Ratio B	REAL
4	75	Actual Ratio B	REAL
20	79	Spare	BYTE
4	99	Default Flow CC/Min	REAL
4	103	Max Flow CC/Min	REAL
4	107	Min Flow CC/Min	REAL
4	111	Ratio Tolerance %	REAL
4	115	Ratio Tolerance Volume CC	REAL
4	119	Flow Rate Tolerance %	REAL
4	123	Flow Rate Tolerance Time Sec	REAL
4	127	Trigger On Delay Millisec	DINT
4	131	Trigger Off Delay Millisec	DINT
4	135	Sequence High Flow CC/min	REAL
4	139	MVR Hold time Millisec	DINT
4	143	Disable Ratio Tracking	BOOL
4	147	Ratio A	REAL
4	151	Ratio B	REAL
4	155	Ratio C	REAL
4	159	Pot Life Time (Min x 10)	DINT
4	163	Pot Life Warning Time (Min x 10)	DINT
1	167	Channel ID	USINT
1	168	Channel Status Byte	BYTE
	168.0	Flow Started	BIT
	168.1	Calibration Active	BIT
	168.2	Manual Override	BIT
4	169	Actual Flow CC/Min	REAL
4	173	Actual Flow Command CC/Min	REAL
4	177	Flow Pilot %	REAL
4	181	Inlet Pressure Pilot	REAL
4	185	Actual Inlet Pressure PSI	REAL
4	189	Actual Outlet Pressure PSI	REAL
20	193	Spare	BYTE
4	213	Flow Meter PPL Calibration	DINT
4	217	Flow Kp Gain	REAL
4	221	Flow Ki Gain	REAL
4	225	Flow Kd Gain	REAL

	RF2+ TO USER EQUIPMENT		
Size Bytes	**Offset**	**Description**	**Type**
4	229	Iband	REAL
4	233	Cband	REAL
4	237	Inlet Pressure Setpoint PSI	REAL
4	241	Min Control Pressure PSI	REAL
4	245	Max Control Pressure PSI	REAL
4	249	Foldback Pressure PSI	REAL
4	253	Disable CCV When Trig Off	BOOL
4	257	Inlet Kp Not Used On RF2	REAL
4	261	Inlet Ki Not Used On RF2	REAL
4	265	Inlet Kd Not Used On RF2	REAL
4	269	Inlet Db Not Used On RF2	REAL
4	273	Min Inlet Pressure PSI	REAL
4	277	Max Inlet Pressure PSI	REAL
56	281	Alarms	DWORD
8	337	Spare	BYTE
1	345	Totals Outlet ID	USINT
1	346	Totals Recipe ID	USINT
1	347	Totals Range ID	USINT
1	348	Spare	BYTE
4	349	Selected Totals A	REAL
4	353	Selected Totals B	REAL
4	357	Selected Totals C	REAL
4	361	Selected Total	REAL
4	365	Selected Solvent total	REAL
20	369	Solenoid Status Last Dword Is Discrete Outputs	DWORD

05.7 BASIC REMOTE OPERATIONS

05.7.1 TIMING BASICS

The data to and from the Anybus gateway is updated in a 10 ms cycle. The user's program should ensure that any signals sent to the RF2+ are maintained for a minimum of 10ms. If the customer bus cycle is slower than 10ms, all signals must be maintained for at least one customer bus cycle.

05.7.2 ERROR HANDLING

Before the RF2+ can start operation, any existing errors must be reset. The user application should monitor the Fault Exists bit of the System status word. Individual faults can be parsed from the alarm words. Faults can be reset by sending a Fault Reset bit command.

Pot life faults cannot be reset via the fault reset bit, but the user's program can monitor the alarms list to detect these faults.

05.7.3 STARTING THE SYSTEM

Each station has its own start and stop bits. After all faults have been reset, a start command can be sent. The system will start on the rising edge of the Start Pulse bit.

Once the station enters the run mode, the start button should return to the low state so it can be commanded again.

05.7.4 LOADING A RECIPE

Recipes are loaded via the Recipe Select word. For systems using synchronous data cycles, the Recipe Select data and the Strobe Recipe bit can be sent in the same data cycle. For systems where the data may not be sent in the same cycle, the Recipe Select should be sent first, followed by the Strobe Recipe bit.

The user's program can monitor the Fluid Sequence Active bit to detect when the load sequence starts and ends. A falling edge of the Fluid Sequence Active bit without a Fault Exists bit will indicate the recipe was successfully loaded.

If the system is loaded with an active recipe, it is not necessary to flush the system before loading the next recipe. The RF2+ will automatically call the appropriate sequences to complete a recipe change.

05.7.5 SPRAY OPERATION

After a recipe has been loaded, spray operation can begin. The minimum requirement to spray is a trigger signal. A flow command can be provided from the recipe default flow or the Gun/Mix Flow command.

Each outlet supports four trigger inputs but only one flow command. When more than one trigger is used, the RF2+ flow command will be multiplied by the number of active triggers.

When using more than one trigger, the user must make the appropriate fluid system design to ensure the appropriate flow reaches each gun.

If the Gun/Mix Flow command falls to 0, the system will automatically select the default flow rate command from the recipe. If the flow is to be stopped, it is recommended to disable the trigger command instead of setting the flow rate command to 0.

05.7.6 FLUSHING THE SYSTEM

Flushing the system can be achieved by two methods.

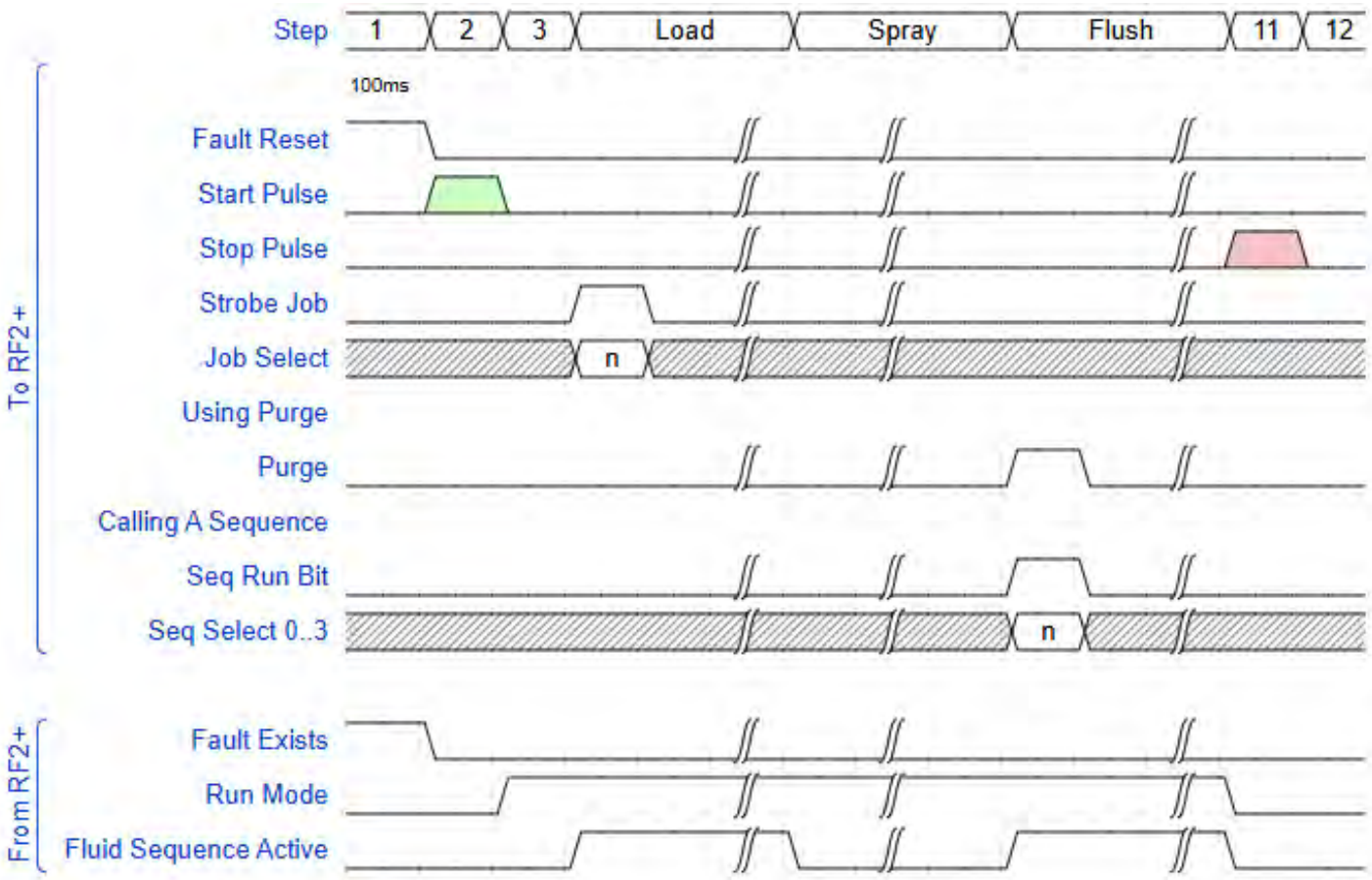
The first method is to enable the Purge bit. On a rising edge of the purge bit, the system will automatically call the Purge All sequence for 2k or 3k outlets and Purge A for 1k outlets from the active recipe. If a station has both 1k and 2k outlets, the Purge All sequence will be called.

For situations where a specific sequence is required, the user's program can instead select a specific sequence 1-16 using the Sequence Select bits.

When using the sequence selection bits, 1 must be subtracted from the desired sequence number so that the range is 0-15. Once a sequence is selected, it can be started by the rising edge of the Sequence Run bit.

05.7.7 STOPPING THE SYSTEM

Each station has its own start and stop bits. A station will stop on the rising edge of the Stop Pulse bit. It is not necessary to maintain the stop bit high while the system is in operation; the Stop Pulse bit should return to the low state once the Run Mode bit shows the station is stopped.


Step
1
2
3
Load
Spray
Flush
11
12
100ms
Fault Reset
Start Pulse
Stop Pulse
Strobe Job
Job Select
n
Using Purge
Purge
Calling A Sequence
Seq Run Bit
Seq Select 0..3
n
To RF2+
Fault Exists
Run Mode
Fluid Sequence Active
From RF2+

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06 APPENDIX

06.1 INTELLIFLOW RF2+ ALARM

RF2+ communication alarms data tables are listed on the pages that follow:

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[0].0	Emergency Stop Reset Required
Alarm[0].1	EtherCAT BUS Comm Error
Alarm[0].2	Festo VTEM Pressure Regulator Module 1 Fault
Alarm[0].3	Festo VTEM Pressure Regulator Module 2 Fault
Alarm[0].4	Festo VTEM Pressure Regulator Module 3 Fault
Alarm[0].5	Festo VTEM Pressure Regulator Module 4 Fault
Alarm[0].6	Festo VTEM Pressure Regulator Module 5 Fault
Alarm[0].7	Festo VTEM Pressure Regulator Module 6 Fault
Alarm[0].8	Festo VTEM Pressure Regulator Module 7 Fault
Alarm[0].9	Festo VTEM Pressure Regulator Module 8 Fault
Alarm[0].10	Communications Loss
Alarm[0].11	Comm Loss - Gateway
Alarm[0].12	Invalid I/O Installed
Alarm[0].13	Outputs Interlocked. Check Output Configurations
Alarm[0].14	I/O Detection Complete. Reboot Required
Alarm[0].15	I/O Detect in Progress
Alarm[1].0	Station 1 - Recipe Update Failed
Alarm[1].1	Station 1 - Fluid Sequence Failed
Alarm[1].2	Station 1 - Solvent Flow Low
Alarm[1].3	Station 1 - Sequence Cannot Start - Missing Interlock Input
Alarm[1].4	Station 1 - Sequence Cannot Start - Not In Run Mode
Alarm[1].5	Station 1 - Sequence Timed Out
Alarm[1].8	Station 2 - Recipe Update Failed
Alarm[1].9	Station 2 - Fluid Sequence Failed
Alarm[1].10	Station 2 - Solvent Flow Low
Alarm[1].11	Station 2 - Sequence Cannot Start - Missing Interlock Input
Alarm[1].12	Station 2 - Sequence Cannot Start - Not In Run Mode
Alarm[1].13	Station 2 - Sequence Timed Out
Alarm[1].16	Station 3 - Recipe Update Failed
Alarm[1].17	Station 3 - Fluid Sequence Failed
Alarm[1].18	Station 3 - Solvent Flow Low
Alarm[1].19	Station 3 - Sequence Cannot Start - Missing Interlock Input
Alarm[1].20	Station 3 - Sequence Cannot Start - Not In Run Mode
Alarm[1].21	Station 3 - Sequence Timed Out
Alarm[1].24	Station 4 - Recipe Update Failed

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[1].25	Station 4 - Fluid Sequence Failed
Alarm[1].26	Station 4 - Solvent Flow Low
Alarm[1].27	Station 4 - Sequence Cannot Start - Missing Interlock Input
Alarm[1].28	Station 4 - Sequence Cannot Start - Not In Run Mode
Alarm[1].29	Station 4 - Sequence Timed Out
Alarm[2].0	Outlet 1 - Pot Life Expired
Alarm[2].1	Outlet 1 - Ratio Out Of Tolerance
Alarm[2].2	Outlet 1 - Flow Rate Out Of Tolerance
Alarm[2].3	Outlet 1- Ratio Shutdown
Alarm[2].4	Outlet 1 - Flow Rate Shutdown
Alarm[2].5	Outlet 1 - Leak Detected
Alarm[2].6	Outlet 1 - No Master Flow
Alarm[2].7	Outlet 1 - Pot Life Warning
Alarm[2].16	Outlet 2 - Pot Life Expired
Alarm[2].17	Outlet 2 - Ratio Out Of Tolerance
Alarm[2].18	Outlet 2 - Flow Rate Out Of Tolerance
Alarm[2].19	Outlet 2 - Ratio Shutdown
Alarm[2].20	Outlet 2 - Flow Rate Shutdown
Alarm[2].21	Outlet 2 - Leak Detected
Alarm[2].22	Outlet 2 - No Master Flow
Alarm[2].23	Outlet 2 - Pot Life Warning
Alarm[3].0	Outlet 3 - Pot Life Expired
Alarm[3].1	Outlet 3 - Ratio Out Of Tolerance
Alarm[3].2	Outlet 3 - Flow Rate Out Of Tolerance
Alarm[3].3	Outlet 3 - Ratio Shutdown
Alarm[3].4	Outlet 3 - Flow Rate Shutdown
Alarm[3].5	Outlet 3 - Leak Detected
Alarm[3].6	Outlet 3 - No Master Flow
Alarm[3].7	Outlet 3 - Pot Life Warning
Alarm[3].16	Outlet 4 - Pot Life Expired
Alarm[3].17	Outlet 4 - Ratio Out Of Tolerance
Alarm[3].18	Outlet 4 - Flow Rate Out Of Tolerance
Alarm[3].19	Outlet 4 - Ratio Shutdown
Alarm[3].20	Outlet 4 - Flow Rate Shutdown
Alarm[3].21	Outlet 4 - Leak Detected
Alarm[3].22	Outlet 4 - No Master Flow
Alarm[3].23	Outlet 4 - Pot Life Warning

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[3].23	Outlet 4 - Pot Life Warning
Alarm[4].0	Outlet 5 - Pot Life Expired
Alarm[4].1	Outlet 5 - Ratio Out Of Tolerance
Alarm[4].2	Outlet 5 - Flow Rate Out Of Tolerance
Alarm[4].3	Outlet 5 - Ratio Shutdown
Alarm[4].4	Outlet 5 - Flow Rate Shutdown
Alarm[4].5	Outlet 5 - Leak Detected
Alarm[4].6	Outlet 5 - No Master Flow
Alarm[4].7	Outlet 5 - Pot Life Warning
Alarm[4].16	Outlet 6 - Pot Life Expired
Alarm[4].17	Outlet 6 - Ratio Out Of Tolerance
Alarm[4].18	Outlet 6 - Flow Rate Out Of Tolerance
Alarm[4].19	Outlet 6 - Ratio Shutdown
Alarm[4].20	Outlet 6 - Flow Rate Shutdown
Alarm[4].21	Outlet 6 - Leak Detected
Alarm[4].22	Outlet 6 - No Master Flow
Alarm[4].23	Outlet 7 - Pot Life Warning
Alarm[5].0	Outlet 7 - Pot Life Expired
Alarm[5].1	Outlet 7 - Ratio Out Of Tolerance
Alarm[5].2	Outlet 7 - Flow Rate Out Of Tolerance
Alarm[5].3	Outlet 7 - Ratio Shutdown
Alarm[5].4	Outlet 7 - Flow Rate Shutdown
Alarm[5].5	Outlet 7 - Leak Detected
Alarm[5].6	Outlet 7 - No Master Flow
Alarm[5].7	Outlet 8 - Pot Life Warning
Alarm[5].16	Outlet 8 - Pot Life Expired
Alarm[5].17	Outlet 8 - Ratio Out Of Tolerance
Alarm[5].18	Outlet 8 - Flow Rate Out Of Tolerance
Alarm[5].19	Outlet 8 - Ratio Shutdown
Alarm[5].20	Outlet 8 - Flow Rate Shutdown
Alarm[5].21	Outlet 8 - Leak Detected
Alarm[5].22	Outlet 8 - No Master Flow
Alarm[5].23	Outlet 8 - Pot Life Warning
Alarm[6].0	Channel 1 - Outlet Underpressure
Alarm[6].1	Channel 1 - Outlet Overpressure
Alarm[6].2	Channel 1 - Inlet Underpressure
Alarm[3].23	Outlet 4 - Pot Life Warning

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[6].3	Channel 1 - Inlet Overpressure
Alarm[6].4	Channel 1 - Low Flow
Alarm[6].5	Channel 1 - High Flow
Alarm[6].6	Channel 1 - Flow Feedback Loss
Alarm[6].7	Channel 1 - Spray Shutdown
Alarm[6].8	Channel 1 - Reverse Flow Detected
Alarm[6].9	Channel 1 - Inlet Pressure Loss of Feedback
Alarm[6].10	Channel 1 - Outlet Pressure Loss of Feedback
Alarm[6].11	Channel 1 - Motor Fault
Alarm[6].12	Channel 1 - Foldback Pressure Reached
Alarm[6].13	Channel 1 - Flow Out Of Range
Alarm[7].0	Channel 2 - Outlet Underpressure
Alarm[7].1	Channel 2 - Outlet Overpressure
Alarm[7].2	Channel 2 - Inlet Underpressure
Alarm[7].3	Channel 2 - Inlet Overpressure
Alarm[7].4	Channel 2 - Low Flow
Alarm[7].5	Channel 2 - High Flow
Alarm[7].6	Channel 2 - Flow Feedback Loss
Alarm[7].7	Channel 2 - Spray Shutdown
Alarm[7].8	Channel 2 - Reverse Flow Detected
Alarm[7].9	Channel 2 - Inlet Pressure Loss of Feedback
Alarm[7].10	Channel 2 - Outlet Pressure Loss of Feedback
Alarm[7].11	Channel 2 - Motor Fault
Alarm[7].12	Channel 2 - Foldback Pressure Reached
Alarm[7].13	Channel 2 - Flow Out Of Range
Alarm[8].0	Channel 3 - Outlet Underpressure
Alarm[8].1	Channel 3 - Outlet Overpressure
Alarm[8].2	Channel 3 - Inlet Underpressure
Alarm[8].3	Channel 3 - Inlet Overpressure
Alarm[8].4	Channel 3 - Low Flow
Alarm[8].5	Channel 3 - High Flow
Alarm[8].6	Channel 3 - Flow Feedback Loss
Alarm[8].7	Channel 3 - Spray Shutdown
Alarm[8].8	Channel 3 - Reverse Flow Detected
Alarm[8].9	Channel 3 - Inlet Pressure Loss of Feedback
Alarm[8].10	Channel 3 - Outlet Pressure Loss of Feedback
Alarm[3].23	Outlet 4 - Pot Life Warning

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[8].11	Channel 3 - Motor Fault
Alarm[8].12	Channel 3 - Foldback Pressure Reached
Alarm[8].13	Channel 3 - Flow Out Of Range
Alarm[9].0	Channel 4 - Outlet Underpressure
Alarm[9].1	Channel 4 - Outlet Overpressure
Alarm[9].2	Channel 4 - Inlet Underpressure
Alarm[9].3	Channel 4 - Inlet Overpressure
Alarm[9].4	Channel 4 - Low Flow
Alarm[9].5	Channel 4 - High Flow
Alarm[9].6	Channel 4 - Flow Feedback Loss
Alarm[9].7	Channel 4 - Spray Shutdown
Alarm[9].8	Channel 4 - Reverse Flow Detected
Alarm[9].9	Channel 4 - Inlet Pressure Loss of Feedback
Alarm[9].10	Channel 4 - Outlet Pressure Loss of Feedback
Alarm[9].11	Channel 4 - Motor Fault
Alarm[9].12	Channel 4 - Foldback Pressure Reached
Alarm[9].13	Channel 4 - Flow Out Of Range
Alarm[10].0	Channel 5 - Outlet Underpressure
Alarm[10].1	Channel 5 - Outlet Overpressure
Alarm[10].2	Channel 5 - Inlet Underpressure
Alarm[10].3	Channel 5 - Inlet Overpressure
Alarm[10].4	Channel 5 - Low Flow
Alarm[10].5	Channel 5 - High Flow
Alarm[10].6	Channel 5 - Flow Feedback Loss
Alarm[10].7	Channel 5 - Spray Shutdown
Alarm[10].8	Channel 5 - Reverse Flow Detected
Alarm[10].9	Channel 5 - Inlet Pressure Loss of Feedback
Alarm[10].10	Channel 5 - Outlet Pressure Loss of Feedback
Alarm[10].11	Channel 5 - Motor Fault
Alarm[10].12	Channel 5 - Foldback Pressure Reached
Alarm[10].13	Channel 5 - Flow Out Of Range
Alarm[11].0	Channel 6 - Outlet Underpressure
Alarm[11].1	Channel 6 - Outlet Overpressure
Alarm[11].2	Channel 6 - Inlet Underpressure
Alarm[11].3	Channel 6 - Inlet Overpressure
Alarm[11].4	Channel 6 - Low Flow
Alarm[3].23	Outlet 4 - Pot Life Warning

RF2+ ALARM LIST	
Alarm Array . Alarm Array Bit	**Alarm Description**
Alarm[11].5	Channel 6 - High Flow
Alarm[11].6	Channel 6 - Flow Feedback Loss
Alarm[11].7	Channel 6 - Spray Shutdown
Alarm[11].8	Channel 6 - Reverse Flow Detected
Alarm[11].9	Channel 6 - Inlet Pressure Loss of Feedback
Alarm[11].10	Channel 6 - Outlet Pressure Loss of Feedback
Alarm[11].11	Channel 6 - Motor Fault
Alarm[11].12	Channel 6 - Foldback Pressure Reached
Alarm[11].13	Channel 6 - Flow Out Of Range
Alarm[12].0	Channel 7 - Outlet Underpressure
Alarm[12].1	Channel 7 - Outlet Overpressure
Alarm[12].2	Channel 7 - Inlet Underpressure
Alarm[12].3	Channel 7 - Inlet Overpressure
Alarm[12].4	Channel 7 - Low Flow
Alarm[12].5	Channel 7 - High Flow
Alarm[12].6	Channel 7 - Flow Feedback Loss
Alarm[12].7	Channel 7 - Spray Shutdown
Alarm[12].8	Channel 7 - Reverse Flow Detected
Alarm[12].9	Channel 7 - Inlet Pressure Loss of Feedback
Alarm[12].10	Channel 7 - Outlet Pressure Loss of Feedback
Alarm[12].11	Channel 7 - Motor Fault
Alarm[12].12	Channel 7 - Foldback Pressure Reached
Alarm[12].13	Channel 7 - Flow Out Of Range
Alarm[13].0	Channel 8 - Outlet Underpressure
Alarm[13].1	Channel 8 - Outlet Overpressure
Alarm[13].2	Channel 8 - Inlet Underpressure
Alarm[13].3	Channel 8 - Inlet Overpressure
Alarm[13].4	Channel 8 - Low Flow
Alarm[13].5	Channel 8 - High Flow
Alarm[13].6	Channel 8 - Flow Feedback Loss
Alarm[13].7	Channel 8 - Spray Shutdown
Alarm[13].8	Channel 8 - Reverse Flow Detected
Alarm[13].9	Channel 8 - Inlet Pressure Loss of Feedback
Alarm[13].10	Channel 8 - Outlet Pressure Loss of Feedback
Alarm[13].11	Channel 8 - Motor Fault
Alarm[13].12	Channel 8 - Foldback Pressure Reached
Alarm[13].13	Channel 8 - Flow Out Of Range

07 MANUAL REVISIONS

MANUAL CHANGE SUMMARY		
Date	Description	Version
04/2025	Initial release	R1.0

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WARRANTY POLICY

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