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Introduction

ASMA is somewhat behind in instruction implementation. This document describes the plan for the immediate future and generally going beyond that. Overtime this document will be updated with the implementation status and next set of planned changes.

In general, ASMA supports all machine instructions for all mainframe architectures starting with S/360 models through the systems defined by the SA22-7832-10 version of the *IBM® z/Architecture® Principles of Operation* released in March, 2015.

Extended Mnemonics are more restrictive. See below where within the plan extended mnemonics using any bits of the instruction beyond bit 15 are addressed. Any missing extended mnemonic using bits 8-15 should be reported as a bug.

Because ASMA instructions are defined by the MSL files (see the `asma/msl` directory), this is largely a plan for MSL. The last feature implemented in `s390x-inst.msl` is the Miscellaneous Instructions Extension Facility 1 and its three instructions: `CLGT`, `CLT`, and `RISBGN`. These instructions were added by the PoO manual SA22-7832-11, released in September, 2017.

The latest PoO manual, -13, was released in May, 2022. This makes ASMA instruction support five years behind. Most, but not all, new instructions are in the area of new floating point instructions and vector instructions. Of most interest by the users of ASMA are support

for new instructions that are of more general use. "General use" includes privileged instructions for bare-metal programs.

This table documents the general status of instruction development for the -11, -12, and -13 PoO manuals by chapter.

Instructions	Chapter	-11 Status	-12 Status	-13 Status
General	7	Researched	?	?
Decimal	8	No change	?	?
Control	10	Researched	?	?
I/O Instructions	14	No change	?	?

Following implementation of the new instructions, the Machine Specification Language enhancements required for many of the new extended mnemonics using bits beyond 15 will be made. The **plan** for the actual extended mnemonics and the implementation of the new floating point and vector instructions will be addressed in the future.

In the tables in the following sections, instructions, MSL formats, and programming notes in **bold** text require implementation. As implementation occurs, the bold text font will be changed to normal text font.

Change History

Change	Date	Description
1	4 Sep 2022	Initial release.

SA22-7832-11 – September, 2017

No new decimal instructions, Chapter 8, nor new I/O Instructions, Chapter 14, were added. Instructions that operate upon decimal floating point data, Chapter 20, and decimal data acted upon by vector instructions, Chapter 25 *were* added. Those additions are planned for a later implementation.

New General Instructions – Chapter 7

Mnemonic	Page #	Prog. Notes	MSL Format	Implemented	Other Notes
AGH	**7-28**	31	RXYA		
BIC	**7-39**	31	RXYB		Research Extended Mnemonics
KMA	**7-78**	33	RRFB3		
CLT	7-155	26	RSYB	yes	
CLGT	7-155	26	RSYB	yes	
LGG	**7-274**	32	RXYA		
LGSC	**7-275**	32	RXYA		
LLGFSG	**7-274**	32	RXYA		
MG	**7-304**	31	RXYA		
MGRK	**7-304**	31	RRFA1		
MGH	**7-305**	31	RXYA		
MSC	**7-307**	31	RXYA		
MSRKC	**7-307**	31	RRFA1		
MSGC	**7-307**	31	RXYA		
MSGRKC	**7-307**	31	RRFA1		
PRNO	**7-346**	29	RRE		
RISBGN	7-363	26	RIEF	yes	
STGSC	**7-383**	32	RXYA		
SGH	**7-388**	31	RXYA		

Programming Notes

Note #	Description
26	Miscellaneous-Instruction Extensions Facility 1
29	**Message-Security-Assist Extension 5**
31	**Miscellaneous-Instruction Extensions Facility 2**
32	**Guarded Storage Facility**
33	**Message-Security-Assist Extension 8**

New Control Instructions – Chapter 10

Mnemonic	Page #	Prog. Notes	MSL Format	Implemented	Notes
IRBM	**10-30**	11	RRE		
TPEI	**10-169**	12	RRE		

Programming Notes

Note #	Description
11	Insert-Reference-Bits-Multiple Facility
12	Test Pending External Interruption Facility