S P E C T R U M
I N S T R U M E N T A T I O N

PDN – Product Discontinuance Notice

Product Affected	M3i.48xx Series M3i.48xx-exp Series	Issue Date	1st January 2019
Reasons for Discontinuance	The complete series are replaced by a newer and advanced product series. Some electronic parts used on the series are discontinued by the manufacturers.	Last Time Buy Date	There is no fixed last time buy date as the availability depends on the number or purchases issued. We estimate that the products will be available until 2020 or longer.

The M2p.59xx-x4 and the M4i.44xx series are replacements for the M3i.48xx-exp and the M3i.48xx series with better specifications. It offers many more versions with higher bandwidth and a faster sampling rate while having a shorter board size. Besides the main differences there are many small improvements that allow easier interfacing with different application areas. Although the replacement series has an improved interface the API is still the same making a migration from existing software an easy step.

The full M2p.59xx-4 series offers 20 different models ranging from 1 channel to 8 channels and 20 MS/s to 125 MS/s. A full list of products is found on Spectrum's website: https://spectrum-instrumentation.com/en/m2p59xx-x4-pci-express-pcie-x4

The full M4i.44xx-8 series offers 10 different models ranging from 2 channel to 4 channels and 130 MS/s to 500 MS/s. A full list of products is found on Spectrum's website: https://spectrum-instrumentation.com/en/m4i44xx-x8-pci-express-pcie-x8

Product Series Replacement Table

Please note that the legacy PCI version M3i.48xx has no direct replacement. Instead the PCIe version needs to be used.

Discontinued Product						Replacement Product					
Name	Resolution	Channels		Speed	Bandwidth	Name	Resolution	Channels		Speed	Bandwidth
		SE	Diff					SE	Diff		
M3i.4830-exp	16 Bit	1	-	65 MS/s	35 MHz	M2p.5940-x4	16 Bit	1	1	80 MS/s	40 MHz
M3i.4831-exp	16 Bit	2	-	65 MS/s	35 MHz	M2p.5941-x4	16 Bit	2	2	80 MS/s	40 MHz
M3i.4840-exp	16 Bit	1	-	105 MS/s	50 MHz	M2p.5960-x4	16 Bit	1	1	125 MS/s	60 MHz
M3i.4841-exp	16 Bit	2	-	105 MS/s	50 MHz	M2p.5961-x4	16 Bit	2	2	125 MS/s	60 MHz
M3i.4860-exp	16 Bit	1	-	180 MS/s	90 MHz	M4i.4420-x8	16 Bit	2	-	250 MS/s	125 MHz
M3i.4861-exp	16 Bit	2	-	180 MS/s	90 MHz	M4i.4420-x8	16 Bit	2	-	250 MS/s	125 MHz

SE = Single-Ended Inputs
Diff = Differential Inputs

Feature Comparison

Feature	M3i.xxxx-exp PCIe Card	M3i.xxxx PCI Card	M2p.xxxx-x4 PCIe Card	Remarks
Size	312 mm x 107 mm full length, full height		168 mm x 107 mm half length, full height	1/2 PCIe size fits into many more systems
Power Consumption	Max 31 Watts	Max 23 Watts	Max 18 Watts	
On-board memory	Standard 512 MByte, Option 2 GByte		Standard 1 GByte	Fast streaming speed makes memory option superfluous
Interface	PCIe x1 Gen1	PCI 32 Bit 66 MHz	PCIe x4 Gen1	Legacy PCI interface discontinued
Data Transfer Speed	160 MByte/s	200 MByte/s	700 MByte/s	4 times faster transfer speed allows more streaming applications
FIFO Mode Buffering	Some data always stays in FIFO buffers, needs force trigger to read last acquired segments.		Complete FIFO buffer readable at any time.	In FIFO mode M2p series allows to read out all data that has been acquired, no data remains in buffers, no need for force trigger.
SCAPP GPU Interface	Not available		Available	Data can be transferred directly to a CUDA-based GPU for fast data processing
I/O lines	1 x Trigger I/O 1 x Clock I/O		1 x Trigger-In 1 x Clock-In 1 x Multi-Purpose-Out 3 x Multi-Purpose-I/O	4 additional I/O lines as standard can be used for easy interfacing with other equipment. The 3 x Multi-Purpose I/O can also be used for synchronous digital-in (digitizer) or synchronous marker outputs (AWG)
Clock Modes	Internal External Reference		Internal External Reference Direct External Clock	Direct external clock now allows variable clock between 1 MHz and max sampling rate, ideal for OCT applications
External Clock Ranges	User needs to know and program the clock range		Not needed	External clock now independent of clock range and channel config
Clock Accuracy	32 ppm		1 ppm	1 ppm was an option for M2i series and is now standard
Clock Setup Granularity	1 Hz with some frequency gaps		1 Hz	No more frequency gaps
External trigger	Level comparator ±5V		Level comparator ±5V	

Feature	M3i.xxxx-exp PCIe Card	M3i.xxxx PCI Card	M2p.xxxx-x4 PCIe Card	Remarks
External trigger sources	3 as standard		4 as standard	
Trigger hold-off	Not available		0 to 4 GSamples	New feature: programmable trigger hold-off for multi/gate/aba mode
Timestamp Ref Clock	Needed option BaseXIO		Standard	
Trigger Source Mark	Not available		Standard	Trigger source is automatically stored with timestamp and can be examined for each trigger event.
API Interface	SPCM		SPCM	Same API Interface

Option Replacement Table

Option	M3i Card	M2p Card	Remarks
Synchronization Star-Hub Small	M2i.xxxx-SH4	M2p.xxxx-SH6ex M2p.xxxx-SH6tm	Two mounting options allow to match the system restrictions. Ex = extension, card is extended to 3/4 PCIe length but still only 1 slot width
Synchronization Star-Hub Large	M2i.xxxx-SH8	M2p.xxxx-SH16ex M2p.xxxx-SH16tm	Tm = top-mount, star-hub is mounted on top, card length stays at 1/2 PCIe length but occupies two slots
BaseXIO lines	M2i.xxxx-bxio	3 to 4 lines standard	The standard card already contains one Multi-Purpose output and three Multi-Purpose I/O lines which replace the BaseXIO option. Please contact Spectrum if you are in need of more lines.

Feature Comparison – Analog Module

Feature	48xx	59xx	Remarks
Connectors Analog Trigger Clock Multi-Purpose	SMB MMCX MMCX MMCX	SMB SMB SMB MMCX	
Resolution	16 Bit	16 Bit	
Input Mode	Single-ended	Single-ended or Differential	
Sampling Speed	65 MS/s to 180 MS/s	20 MS/s to 125 MS/s	
Bandwidth	30 MHz to 90 MHz	10 MHz to 60 MHz	
Input Ranges	±200 mV to ±10 V	±200 mV to ±10 V	
Input Offset	Not available	±100%	
Trigger Level Resolution	10 bit	16 bit	
Re-Arming Time	32 samples	24 samples	+ programmed pre-trigger + programmed hold-off
Digital Inputs	n.a.	3 channels as standard	Digital inputs are synchronously with the analog inputs sampled and stored in the memory.

Obsolescence Policy

With release of the PDN the complete product series is no longer available for new projects. The complete stock is reserved for existing projects and for customers who are not able to change to the new series due to certification, hardware or software limitations.

In case that the only limitation that prevents you from ordering the new product series is the missing legacy PCI interface we strongly recommend switching to the newer PCI Express interface. The legacy PCI has been obsolete for years now and you will most likely face problems in the future when you need to replace the PC system.

More detailed information on the obsolescence policy is found online: https://spectrum-instrumentation.com/en/obsolescence-policy

If you have any questions or concerns about switching from the obsolete M3i.48xx series products to the replacement M2p.59xx or M4i.44xx series please contact Spectrum directly at request@spec.de

Please find additional information on our website:

- Data sheet of M2p.59xx series:
  https://spectrum-instrumentation.com/sites/default/files/download/m2p59_datasheet_english.pdf

- Manual of M2p.59xx series:
  https://spectrum-instrumentation.com/sites/default/files/download/m2p_59xx_manual_english.pdf

- Data sheet of M4i.44xx series:
  https://spectrum-instrumentation.com/sites/default/files/download/m4i44_datasheet_english.pdf

- Manual of M4i.44xx series:
  https://spectrum-instrumentation.com/sites/default/files/download/m4i_m4x_44xx_manual_english.pdf

- Manual of M3i.48xx series:
  https://spectrum-instrumentation.com/sites/default/files/download/m3i48_manual_english.pdf