Available MX Drivers and Their Status

(as of MX Subversion revision 4578)

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This document provides a list of all of the existing MX drivers. The color coding reflects my judgement of the current status of each driver. Blue, Green, and Yellow drivers are either currently in use or can probably be brought back to life with little trouble.

Working	Currenly used or very recently used on an MX-controlled beamline.
Recently Working	Used in the somewhat recent past.
In Progress	Currently in development. Likely to work soon.
Old	Used a long time ago. Probably still works.
Ancient	Used a *very* long time ago. It may be hard to get a working configuration.
Deferred	Was requested by someone, but a hold was put on it.
Never Finished	Partially implemented, but ran into some problem.
Possibly Broken?	It worked at one time, but is probably broken now. Usually due to vendor changes in hardware.
Obsolete?	Nobody I know is currently using it and it is probably not worth it to update it.
!Dead!	The hardware for this device is gone and will never exist again. Will probably be removed soon.
Proposed?	Wishlist items.

1 Interface Records

1.1 CAMAC Drivers

dsp6001	**Ancient**	DSP Technology 6001/6002 CAMAC interface for ISA PCs.
epics_camac	**Old**	MX CAMAC driver for the EPICS CAMAC record.
esone_camac	**Old**	CAMAC interface driver that uses an ESONE-standard CAMAC library.
soft_camac	**Recently Working**	Software emulated CAMAC interface.

1.2 Camera Link Interfaces

camera_link_api	**Recently Working**	Generic Camera Link interface.
epix_camera_link	**Working**	EPIX Camera Link API for serial I/O.
soft_camera_link	**Recently Working**	Software emulated Camera Link interface.

1.3 GPIB Drivers

epics_gpib	**Old**	MX GPIB driver for the old EPICS GPIB record.
network_gpib	**Working**	GPIB interface controlled by a remote MX server.
k500serial	**Working**	Keithley 500 Serial to GPIB interface.
linux_gpib	**Working**	MX interface driver for the Linux-GPIB package.
linux_usbtmc	**Working**	(LINUX) USB Test and Measurement Class devices on Linux.
micro488ex	**Old**	IOtech Micro488EX Serial to GPIB interface.
ni488	**Working**	MX interface driver for NI488-style GPIB interfaces.
prologix	**Working**	Prologix GPIB-USB and GPIB-Ethernet interfaces.

1.4 HTTP Interfaces

http_server	**Working**	Simple HTTP 1.1 communication with a web server.

1.5 Modbus Interfaces

modbus_serial_rtu	**Never Finished**	Modbus Serial-RTU interfaces.
modbus_tcp	**Recently Working**	Modbus TCP-IP interfaces.

1.6 Serial Drivers (RS-232 or similar)

network_rs232	**Working**	RS-232 device controlled by a remote MX server.
soft_rs232	**Working**	Software emulation of an RS-232 interface.
tcp232	**Working**	TCP-IP socket treated as an RS-232 port.

telnet	**Working**	Telnet socket treated as an RS-232 port.
tty	**Working**	(POSIX) Posix style termios interface for a serial port.
win32_com	**Working**	(WIN32) Windows style interface for a serial port.
dos_com	**Ancient**	(MSDOS) BIOS style interface for a serial port.
fossil	**Ancient**	(MSDOS) BIOS style interface using old FOSSIL driver.
vms_terminal	**Old**	(VMS) VMS QIO interface for a serial port.
vxworks_rs232	**Old**	(VXWORKS) vxWorks style interface for a serial port.
camera_link_rs232	**Working**	Simulates a serial port style connection over a Camera Link cable..
edt_rs232	**Deferred**	Serial port interface for EDT camera boards.
epics_rs232	**Old**	MX RS232 driver for the old EPICS RS232 record.
epix_rs232	**Working**	Serial port interface for EPIX, Inc. video input boards.
file_rs232	**Recently Working**	Simulation of a serial port by reading/writing files.
ks3344	**Old**	(CAMAC) Kinetic Systems KS3344 serial port.
sim900_port	**Working**	A serial port in a Stanford Research Systems SIM900 mainframe.
spec_command	**Old**	Sends commands to a remote Spec server.
u500_rs232	**Working**	Aerotech Unidex 500 driver for sending program lins to the controller.
wago750_serial	**Recently Working**	Wago 750-65X serial port.

1.7 USB Interface Drivers

libusb_01	**Working**	USB interface driver for the old libusb 0.1.12 library.

1.8 VME Bus I/O

epics_vme	**Recently Working**	MX VME driver for the EPICS VME record.
mmap_vme	**Old**	(LINUX) Linux-based access to VME I/O addresses.
rtems_vme	**Recently Working**	(RTEMS) RTEMS-based access to VME I/O addresses.
sis3100	**Working**	(LINUX) Struck SIS 1100/3100 PCI/CPCI interface to VME.
vxi_memacc	**Old**	(LINUX) VME access using NI-VISA.
vxworks_vme	**Old**	(VXWORKS) vxWorks-based access to VME I/O addresses.

1.9 x86-Style I/O Ports (portio)

dos_portio	**Old**	(MSDOS,WINDOWS 9x) direct access to I/O ports.
linux_ioperm	**Old**	(LINUX) ioperm access to I/O ports.
linux_iopl	**Old**	(LINUX) iopl access to I/O ports.
linux_portio	**Ancient**	(LINUX) access to I/O ports via the Linux portio driver.
linux_uio	**Proposed?**	(LINUX) UIO access to I/O ports. (relatively easy)

linux_vfio	**Proposed?**	(LINUX) VFIO access to I/O ports. (not sure)

2 Controllers and Devices

2.1 ADCMOD2 Electrometer System (from Steve Ross) (via VME Bus I/O)

aps_adcmod2	**Possibly Broken?**	Controller driver.
aps_adcmod2_amplifier	**Possibly Broken?**	APS ADCMOD2 amplifier.
aps_adcmod2_ainput	**Possibly Broken?**	APS ADCMOD2 input signal.

2.2 Advanced Control Systems MCU-2 Motor Controller

mcu2	**Working**	ACS MCU-2 motor axis.

2.3 AMD Am9513 Counter/Timer Chips (vio portio)

am9513	**Old**	Chip driver.
am9513_motor	**Old**	Uses Am9513 counters to control stepping motors.
am9513_scaler	**Old**	Uses Am9513 counters as scalers.
am9513_timer	**Old**	Uses Am9513 counters as timers.

2.4 Amptek DP4 Multichannel Analyzers

amptek_dp4_mca	**Deferred**	Amptek DP4 multichannel analyzers.

2.5 Amptek DP5-protocol Multichannel Analyzers

amptek_dp5	**Working**	Controller driver.
amptek_dp5_mca	**Working**	Amptek DP5 multichannel analyzers.

2.6 Animatics SmartMotor Motor Controllers

smartmotor	**Recently Working**	Smartmotor motor axis.
smartmotor_ain	**Recently Working**	Smartmotor analog inputs.
smartmotor_aout	**Recently Working**	Smartmotor analog outputs.
smartmotor_din	**Recently Working**	Smartmotor digital inputs.
smartmotor_dout	**Recently Working**	Smartmotor digital outputs.

2.7 Bit-wise I/O

bit_in	**Working**	Read a bit range from another digital input.

bit_out	**Working**	Write a bit range to another digital output.

2.8 BK Precision 912x Programmable Power Supplies

bkprecision_912x	**Recently Working**	Controller driver.
bkprecision_ain	**Recently Working**	BK Precision 912x analog inputs.
bkprecision_aout	**Recently Working**	BK Precision 912x analog outputs.
bkprecision_din	**Recently Working**	BK Precision 912x digital inputs.
bkprecision_dout	**Recently Working**	BK Precision 912x digital outputs.
bkprecision_wvout	**Recently Working**	BK Precision 912x waveform outputs.

2.9 Black Cat Systems GM-10, GM-45, GM-50, and GM-90 Radiation Detectors

gm10_scaler	**Old**	Black Cat Systems GM-10 scaler.
gm10_timer	**Old**	Black Cat Systems GM-10 timer.

2.10 Blu-Ice Related Drivers

bluice_dcss_area_detector	**Old**	Blu-Ice area detector as used by a DCSS client.
bluice_dhs_area_detector	**Old**	Blu-Ice area detector as used in a DHS server.
bluice_dcss_ion_chamber	**Old**	Blu-Ice ion chamber readout as used by a DCSS client.
bluice_dhs_ion_chamber	**Old**	Blu-Ice ion chamber readout as used in a DHS server.
bluice_dcss_motor	**Old**	Blu-Ice motor as used by a DCSS client.
bluice_dhs_motor	**Old**	Blu-Ice motor as used in a DHS server.
bluice_dcss_shutter	**Old**	Blu-Ice shutter as used by a DCSS client.
bluice_dhs_shutter	**Old**	Blu-Ice shutter as used in a DHS server.
bluice_dcss_timer	**Old**	Blu-Ice timer as used by a DCSS client.
bluice_dhs_timer	**Old**	Blu-Ice timer as used in a DHS server.
bluice_dcss_operation	**Old**	Used by DCSS client to interact with a Blu-Ice operation.
bluice_dhs_operation	**Old**	Used by DHS server to interact with a Blu-Ice operation.
bluice_self_operation	**Old**	Used by a Blu-Ice process to interact with itself.
bluice_dcss_string	**Old**	Used by DCSS client to receive a Blu-Ice variable.
bluice_dhs_string	**Old**	Used by DHS server to receive a Blu-Ice variable.
bluice_self_string	**Old**	Used by a Blu-Ice process to receive a variable from itself.
bluice_command	**Old**	Used by DCSS client to send a command to Blu-Ice.
bluice_master	**Old**	Used by DCSS client to become Blu-Ice master.

2.11 Bruker D8 Motor Controllers

d8	**Old**	Controller driver.
d8_motor	**Old**	Bruker D8 motor axis.

2.12 Crossbow Technology CXTILT02 Digital Inclinometer

cxtilt02	**Recently Working**	Controller driver.
cxtilt02_angle	**Recently Working**	Angle measurement driver.

2.13 Data Track Tracker I/O Ports

tracker_ain	**Old**	Data Track Tracker analog inputs.
tracker_aout	**Old**	Data Track Tracker analog outputs.
tracker_din	**Old**	Data Track Tracker digital inputs.
tracker_dout	**Old**	Data Track Tracker digital outputs.

2.14 Dectris EIGER Area Detectors

eiger	**In Progress**	Dectris EIGER area detectors.

2.15 Dectris Pilatus Area Detectors

pilatus	**Working**	Dectris Pilatus area detectors.

2.16 Delta Tau PMAC and Turbo PMAC Motor Controllers

pmac	**Working**	Controller driver.
pmac_ainput	**Working**	Control PMAC variables as analog inputs.
pmac_aoutput	**Working**	Control PMAC variables as analog outputs.
pmac_dinput	**Working**	Control PMAC variables as digital inputs.
pmac_doutput	**Working**	Control PMAC variables as digital outputs.
pmac_mce	**Old**	Records the position of a PMAC motor in a pair of multichannel scaler channels.
pmac_motor	**Working**	PMAC motor axis.
pmac_cs_axis	**Working**	PMAC coordinate system axis.

2.17 DSP E500 CAMAC Motor Controller

e500	**Old**	DSP E500 motor axis.

2.18 DSP QS450 CAMAC Scaler

qs450	**Old**	DSP QS450 scaler.

2.19 DSP RTC-018 CAMAC Timer

rtc018 Old DSP RTC-018 timer.

2.20 Files

file_dinput Recently Working Simulation of a digital input by reading from a file.
file_rs232 Recently Working Simulation of a serial port by reading/writing files.

2.21 Hitachi KP-D20A/B Cameras

hitachi_kp_d20 Working Hitachi KP-D20A/B pan/tilt/zoom controller.

2.22 Intel 8255 Digital I/O Chips (via portio)

i8255 Old Controller driver.
i8255_in Old Intel 8255 8-bit digital input.
i8255_out Old Intel 8255 8-bit digital output.

2.23 Intelligent Motion Systems/Schneider MDrive/MForce Motor Controllers

mdrive Working IMS/Schneider MDrive/MForce motor axes.
mdrive_ain Working IMS/Scneider MDrive/MForce analog inputs.
mdrive_din Working IMS/Schneider MDrive/MForce digital inputs.
mdrive_dout Working IMS/Schneider MDrive/MForce digital outputs.

2.24 Intelligent Motion Systems Panther Motor Controllers

panther_he Old IMS Panther HE motor axis.
panther_hi Old IMS Panther HI motor axis.

2.25 Joerger SMC24 CAMAC Motor Controller

smc24 Old Joerger SMC24 motor axis.

2.26 Joerger VSC16 Counter/Timer Controller (via VME Bus I/O)

vsc16 Old Controller driver.
vsc16_scaler Old Joerger VSC16 scaler channel.
vsc16_timer Old Joerger VSC16 timer channel.

2.27 Keithley 199 Series Multimeters/Scanners

keithley199	**Working**	Controller driver.
keithley199_ainput	**Working**	Read measurements from a Keithley 199.

2.28 Keithley 428 Current Amplifier

keithley428	**Working**	Keithley 428 amplifier.

2.29 Keithley 2000 Series Multimeters

keithley2000	**Old**	Controller driver.
keithley2000_ainput	**Old**	Keithley 2000 analog inputs.

2.30 Keithley 2400 Series Switching Multimeters

keithley2400	**Working**	Controller driver.
keithley2400_amp	**Working**	Keithley 2400 amplifiers.
keithley2400_ainput	**Working**	Keithley 2400 analog inputs.
keithley2400_aoutput	**Working**	Keithley 2400 analog outputs.
keithley2400_doutput	**Working**	Keithley 2400 digital outputs.

2.31 Keithley 2600 Series SourceMeters

keithley2600	**Working**	Controller driver.
keithley2600_ainput	**Working**	Keithley 2600 analog inputs.
keithley2600_aoutput	**Working**	Keithley 2600 analog outputs.

2.32 Keithley 2700 Series Switching Multimeters

keithley2700	**Working**	Controller driver.
keithley2700_aoutput	**Working**	Keithley 2700 analog outputs.

2.33 Keyboard

keyboard_dinput	**Working**	Uses keypresses on a keyboard to simulate a digital input.

2.34 Kinetic Systems KS3063 16-bit Input Gate/Output Registers (via CAMAC)

ks3063_in	**Old**	Kinetic Systems KS3063 digital input.
ks3063_out	**Old**	Kinetic Systems KS3063 digital output.

2.35 Kinetic Systems 3112 12-bit DAC (via CAMAC)

ks3112 Old Kinetic Systems KS3112 CAMAC DAC.

2.36 Kinetic Systems 3512 12-bit ADC (via CAMAC)

ks3512 Old Kinetic Systems KS3512 CAMAC ADC.

2.37 Kinetic Systems KS3610 CAMAC Scaler

ks3610 Old Kinetic Systems KS3610 scaler.

2.38 Kinetic Systems 3640 Up/Down Counter (via CAMAC)

ks3640 Old Kinetic Systems KS3640 CAMAC up/down counter as MX encoder.

2.39 Kohzu SC-200, SC-400, and SC-800 Motor Controllers

kohzu_sc	Working	Controller driver.
kohzu_sc_motor	Working	Kohzu SC-200/400/800 motor axis.

2.40 LakeShore 330 Temperature Controller

ls330_motor Working LakeShore 330 temperature as a motor.

2.41 Linkam T92, T93, T94, and T95 Temperature Controllers

linkam_t9x	Old	Controller for Linkam T9x series cooling system controllers.
linkam_t9x_motor	Old	Motion control part of T9x controllers.
linkam_t9x_pump	Old	Pump control part of T9x controllers.
linkam_t9x_temp	Old	Temperature control part of T9x controllers.

2.42 Linux parport Driver for Parallel Ports as Digital I/O

linux_parport	Working	(LINUX) I/O driver.
linux_parport_in	Working	(LINUX) Parallel port as digital input.
linux_parport_out	Working	(LINUX) Parallel port as digital output.

2.43 LPT Printer Ports (via portio)

lpt	**Old**	Controller driver.
lpt_in	**Old**	LPT printer port as an 8-bit digital input.
lpt_out	**Old**	LPT printer port as an 8-bit digital output.

2.44 marXperts Mar 345 Image Plate Detectors

mar345	**Never Finished**	Mar345 image plate control.

2.45 marXperts Desktop Beamline Goniostat Controller

mardtb	**Possibly Broken?**	Controller driver.
mardtb_motor	**Possibly Broken?**	MarDTB motor axis.
mardtb_shutter	**Possibly Broken?**	Controls MarDTB shutter.
mardtb_status	**Possibly Broken?**	Reads out MarDTB parameters.

2.46 McLennan PM304 Motor Controllers

pm304	**Old**	PM304 motor axis.

2.47 McLennan PM600 and PM304 Motor Controllers

mclennan	**Recently Working**	Mclennan motor axis.
mclennan_ain	**Recently Working**	Mclennan analog inputs.
mclennan_aout	**Recently Working**	Mclennan analog outputs.
mclennan_din	**Recently Working**	Mclennan digital inputs.
mclennan_dout	**Recently Working**	Mclennan digital outputs.

2.48 Miscellaneous Devices

ainput_as_dinput	**Working**	Treat an analog input as a digital input.
aoutput_as_doutput	**Working**	Use an analog output to generate digital output signals.
blind_relay	**Working**	Relay using an MX digital output with no feedback.
dac_motor	**Working**	Control an MX analog output as if it were a motor.
digital_fanin	**Working**	Compute a logical function of several MX record fields (and, or, xor).
digital_fanout	**Working**	Forward a digital output value to several MX record fields.
digital_output_pulser	**Working**	Pulse generator that uses an MX digital output and operating system (OS) timers.
generic_relay	**Working**	Relay using an MX digital output with status read from an MX digital I/O.
pulsed_relay	**Working**	Like a *generic_relay*, but active only for a requested pulse time.
relay_as_doutput	**Working**	Treat a relay as a digital output.
relay_pulser	**Working**	Treat a relay as a pulse generator.
timer_fanout	**Working**	Controls multiple MX timers as if they were one timer.

2.49 MODBUS Coils, Inputs, and Registers

modbus_ainput	**Recently Working**	MODBUS analog inputs.
modbus_aoutput	**Recently Working**	MODBUS analog outputs.
modbus_dinput	**Recently Working**	MODBUS digital inputs.
modbus_doutput	**Recently Working**	MODBUS digital outputs.

2.50 Motorola MC6821 Digital I/O Chips (via portio)

mc6821	**Old**	Controller driver.
mc6821_in	**Old**	Motorola MC6821 8-bit digital input.
mc6821_out	**Old**	Motorola MC6821 8-bit digital output.

2.51 MX Network Devices

autoscale_net	**Working**	Autoscale device controlled by a remote MX server.
network_ainput	**Working**	Analog input controlled by a remote MX server.
network_amplifier	**Working**	Amplifier controlled by a remote MX server.
network_aoutput	**Working**	Analog output controlled by a remote MX server.
network_area_detector	**Working**	Area detector controlled by a remote MX server.
network_dinput	**Working**	Digital input controlled by a remote MX server.
network_doutput	**Working**	Digital output controlled by a remote MX server.
network_gpib	**Working**	GPIB interface controlled by a remote MX server.
network_mca	**Working**	Multichannel analyzer controlled by a remote MX server.
network_mcai	**Working**	Multichannel analog input controlled by a remote MX server.
network_mce	**Working**	Multichannel encoder controlled by a remote MX server.
network_mcs	**Working**	Multichannel scaler controlled by a remote MX server.
network_motor	**Working**	Motor axis controlled by a remote MX server.
network_operation	**Working**	An operation controlled by a remote MX server.
network_ptz	**Working**	Pan/Tilt/Zoom device controlled by a remote MX server.
network_pulser	**Working**	Pulse generator controlled by a remote MX server.
network_relay	**Working**	Relay controlled by a remote MX server.
network_rs232	**Working**	RS-232 device controlled by a remote MX server.
network_sample_changer	**Working**	Sample changer controlled by a remote MX server.
network_sca	**Working**	Single channel analyzer controlled by a remote MX server.
network_scaler	**Working**	Scaler controlled by a remote MX server.
network_timer	**Working**	Timer controlled by a remote MX server.
network_vinput	**Working**	Video input controlled by a remote MX server.
network_wvin	**Working**	Waveform input controlled by a remote MX server.
network_wvout	**Working**	Waveform output controlled by a remote MX server.

2.52 New Focus Picomotor Controllers

picomotor_controller	**Old**	Controller driver.

picomotor	**Old**	Picomotor motor axis.
picomotor_ain	**Old**	Picomotor analog input.
picomotor_din	**Old**	Picomotor digital input.
picomotor_dout	**Old**	Picomotor digital output.

2.53 Newport ESP300 and ESP301 Motor Controllers

esp	**Working**	Controller driver.
esp_motor	**Working**	Newport ESP300/ESP301 motor axis.

2.54 Newport MM3000 Motor Controller

mm3000	**Old**	Controller driver.
mm3000_motor	**Old**	Newport MM3000 motor axis.

2.55 Newport MM4000 and MM4005 Motor Controllers

mm4000	**Old**	Controller driver.
mm4000_motor	**Old**	Newport MM4000/MM4005 motor axis.

2.56 Newport Electronics/Omega Counter/Timer

p6000a	**Recently Working**	Newport Electronics counter/timer as an analog input.

2.57 Newport Electronics/Omega Temperature and Process Controllers

iseries	**Working**	Controller driver.
iseries_ainput	**Working**	iSeries analog inputs.
iseries_aoutput	**Working**	iSeries analog outputs.
iseries_dinput	**Working**	iSeries digital inputs.
iseries_doutput	**Working**	iSeries digital outputs.

2.58 NSLS MMC32 Motor Controllers

mmc32	**Old**	NSLS MMC32 motor axis.

2.59 nuLogic/National Instruments PC-Step Motor Controllers (via portio)

pcstep	**Old**	Controller driver.
pcstep_motor	**Old**	nuLogic/NI PC-Step motor axis..

2.60 Numato Lab GPIO Module

numato_gpio	**Working**	Controller driver.
numato_gpio_ainput	**Working**	Numato Lab GPIO analog inputs.
numato_gpio_dinput	**Working**	Numato Lab GPIO digital inputs.
numato_gpio_doutput	**Working**	Numato Lab GPIO digital outputs.

2.61 Oceaneering Space Systems μ-GLIDE Micropositioning Controller

uglide	**Working**	Controller driver.
uglide_motor	**Working**	OSS μ-GLIDE motor axis.

2.62 OMS Motion VME58 Motor Controllers (via VME Bus I/O)

vme58	**Never Finished**	Controller driver.
vme58_motor	**Never Finished**	OMS VME58 motor axis.

2.63 Ortec 974 Counter/Timer NIM Modules

ortec974	**Old**	NIM 4 channel counter/timer.
ortec974_scaler	**Old**	Ortec 974 scaler channel.
ortec974_timer	**Old**	Ortec 974 timer channel.

2.64 Oxford Cryosystems 600 Cryostream Controllers

cryostream600_motor	**Old**	Controls a Cryostream 600 temperature controller as if it is a motor.
cryostream600_status	**Old**	Reads status values from a Cryostream 600 temperature controller.

2.65 Oxford Danfysik Cyberstar X1000 Scintillation Detector System

cyberstar_x1000	**Working**	Cyberstar X1000 as a single channel analyzer.
cyberstar_x1000_aout	**Working**	Cyberstar X1000 analog outputs for high voltage and delay.

2.66 Oxford Danfysik IC PLUS Intensity Monitors

icplus	**Old**	Controller driver.
icplus_current	**Old**	Oxford Danfysik IC PLUS input current.
icplus_din	**Old**	Oxford Danfysik IC PLUS digital input.
icplus_dout	**Old**	Oxford Danfysik IC PLUS digital output.
icplus_voltage	**Old**	Oxford Danfysik IC PLUS high voltage.

2.67 Oxford Danfysik QBPM Intensity Monitors

qbpm	Old	Controller driver.
qbpm_current	Old	Oxford Danfysik QBPM input current.
qbpm_din	Old	Oxford Danfysik QBPM digital input.
qbpm_dout	Old	Oxford Danfysik QBPM digital output.
qbpm_mcai	Old	Oxford Danfysik QBPM reads out all 4 channels.
qbpm_voltage	Old	Oxford Danfysik QBPM high voltage.

2.68 Oxford Instruments Cryojet Temperature Controllers

cryojet	Old	Controller driver.
cryojet_ainput	Old	Reads analog status values from a Cryojet controller.
cryojet_aoutput	Old	Controls analog settings for a Cryojet controller.
cryojet_doutput	Old	Controls digital settings for a Cryojet controller.
cryojet_motor	Old	Controls a Cryojet temperature controller as if it were a motor.

2.69 Oxford Instruments ILM (Intelligent Level Meter) Controllers

ilm	Old	Controller driver.
ilm_ainput	Old	ILM values returned by the READ command.
ilm_sample_rate	Old	Change sample rate of ILM controller.
ilm_status	Old	ILM status values from the X command.

2.70 Oxford Instruments ISOBUS Devices

isobus	Old	Controller driver.

2.71 Oxford Instruments ITC503 Temperature Controllers

itc503	Old	Controller driver.
itc503_ainput	Old	Reads analog status values from an ITC503 controller.
itc503_aoutput	Old	Controls analog settings for an ITC503 controller.
itc503_doutput	Old	Controls digital settings for an ITC503 controller.
itc503_motor	Old	Controls an ITC503 temperature controller as if it were a motor.

2.72 Panasonic KX-DP702 Pan-Tilt-Zoom Cameras

panasonic_kx_dp702	Old	Panasonic VISCA protocol driver.
panasonic_kx_dp702_ptz	Old	Panasonic KX-DP702 pan/tilt/zoom driver.

2.73 Parker Hannifin Compumotor 6000 and 6K Motor Controllers

compumotor_int	**Working**	Controller driver.
compumotor	**Working**	Compumotor 6000/6K motor axis.
compumotor_lin	**Working**	Compumotor 6000/6K linear interpolation moves of several motors.
compumotor_din	**Working**	Compumotor 6000/6K digital input.
compumotor_dout	**Working**	Compumotor 6000/6K digital output.

2.74 Pfeiffer TPG 261 and TPG 262 Vacuum Gauge Controllers

tpg262	**Old**	Controller driver.
tpg262_pressure	**Old**	Pfeiffer TPG 261/262 pressure reading.

2.75 Phidget Stepper Motor Controller (old non-HID)

phidget_old_stepper_controller	**Old**	Controller driver.
phidget_old_stepper	**Old**	Phidget stepper axis (old non-HID).

2.76 Physik Instrumente E-662 LVPTZ Servo Controller

e662	**Old**	Physik Instrumente E-662 LVPTz motor axis.

2.77 Pontech STP100 Motor Controller

stp100_motor	**Old**	Pontech STP100 motor axis.

2.78 Portio Digital I/O (via portio)

portio_dinput	**Recently Working**	Read from an x86 I/O port.
portio_doutput	**Recently Working**	Write to an x86 I/O port.

2.79 Prairie Digital Model 40 Data Acquisition and Control Module

pdi40	**Old**	Controller driver.
pdi40_motor	**Old**	PDI 40 motor axis.

2.80 Prairie Digital Model 45 Data Acquisition and Control Module

pdi45	**Old**	Controller driver.
pdi45_ainput	**Old**	PDI45 analog inputs.
pdi45_aoutput	**Old**	PDI45 analog outputs.

pdi45_dinput	**Old**	PDI45 digital inputs.
pdi45_doutput	**Old**	PDI45 digital outputs.
pdi45_pulser	**Old**	PDI45 pulse generator.
pdi45_scaler	**Never Finished**	PDI45 digital outputs.
pdi45_timer	**Old**	PDI45 digital outputs.

2.81 Pyramid Technical Consultants I404 Digital Electrometer

i404	**Working**	Controller driver.
i404_amp	**Working**	I404 amplifier channel.
i404_mcai	**Working**	I404 reads out all 4 channels.

2.82 Quantum Detectors Merlin Medipix Area Detectors

merlin_medipix	**Working**	Merlin Medipix area detectors.

2.83 Radix Instruments Databox Motor Controller

databox	**Old**	Controller driver.
databox_mce	**Old**	Reports stored Radix Databox motor positions.
databox_mcs	**Old**	Radix Databox MCS.
databox_motor	**Old**	Radix Databox motor axis.
databox_scaler	**Old**	Radix Databox scaler channel.
databox_timer	**Old**	Radix Databox timer.

2.84 Rayonix MarCCD

marccd	**Working**	MarCCD area detector interface started from the MarCCD GUI.
marccd_server_socket	**Working**	MarCCD area detector control via MarUSA-provided server socket program.
marccd_shutter	**Working**	Controls MarCCD shutter.

2.85 Roentec RCL Multichannel Analyzers

roentec_rcl_mca	**Working**	Roentec MCAs using the RCL 2.2 command language.

2.86 Scientific Instruments 9650 Temperature Controllers

Warning: The controller owned by MRCAT has a broken remote interface and the Scientific Instruments company no longer has anyone who can fix these controllers. So it is not know whether the drivers below really work with a controller that is not broken.

si9650_motor	**Never Finished**	Controls a Scientific Instruments 9650 temperature controller as if it were a motor.
si9650_status	**Never Finished**	Reads status values from a Scientific Instruments 9650 temperature controller.

2.87 SCIPE

scipe_server	**Obsolete?**	SCIPE network server.
scipe_ain	**Obsolete?**	SCIPE analog inputs.
scipe_amplifier	**Obsolete?**	SCIPE amplifier.
scipe_aout	**Obsolete?**	SCIPE analog outputs.
scipe_din	**Obsolete?**	SCIPE digital inputs.
scipe_dout	**Obsolete?**	SCIPE digital outputs.
scipe_motor	**Obsolete?**	SCIPE motor axis.
scipe_scaler	**Obsolete?**	SCIPE scaler.
scipe_timer	**Obsolete?**	SCIPE timer.

2.88 Software Emulated Devices

disabled_motor	**Working**	Disabled motor.
file_vinput	**Working**	Emulated video input that reads from a directory of existing image files.
function_generator_scaler	**Working**	Software emulated scaler that acts like a function generator.
interval_timer	**Working**	Uses an MX OS interval timer as a timer.
monte_carlo_mca	**Working**	Software emulated MCA using simple Monte Carlo calculations.
soft_ainput	**Working**	Software emulated analog input.
soft_amplifier	**Working**	Software emulated amplifier.
soft_aoutput	**Working**	Software emulated analog output.
soft_area_detector	**Working**	Software-emulated area detector that uses an MX video input to get frames.
soft_camac	**Recently Working**	Software emulated CAMAC interface.
soft_camera_link	**Recently Working**	Software emulated Camera Link interface.
soft_dinput	**Working**	Software emulated digital input.
soft_doutput	**Working**	Software emulated digital output.
soft_mca	**Working**	Software emulated multichannel analyzer.
soft_mce	**Never Finished**	Uses an OS thread to periodically record motor positions.
soft_mcs	**Working**	Software emulated multichannel scaler.
soft_motor	**Working**	Software emulated motor.
soft_rs232	**Working**	Software emulation of an RS-232 interface.
soft_sample_changer	**Working**	Software-emulated sample changer.
soft_sca	**Working**	Software emulated single channel analyzer.
soft_scaler	**Working**	Software emulated scaler that reads scaler values from a precomputed table.
soft_timer	**Working**	Software emulated timer that uses OS timer ticks for timing.
soft_vinput	**Working**	Software-emulated video input with selectable image patterns.

2.89 Sony Network Cameras

sony_snc	**Never Finished**	Sony network camera.

2.90 Sony VISCA Pan-Tilt-Zoom Cameras

sony_visca	**Old**	Sony VISCA protocol driver.
sony_visca_ptz	**Old**	Sony VISCA-based pan/tilt/zoom controller.

2.91 Spec Remote Server Devices

spec_command	**Old**	Sends commands to a remote Spec server.
spec_motor	**Old**	Motor axis controlled by a remote Spec server.
spec_scaler	**Old**	Scaler channel controlled by a remote Spec server.
spec_timer	**Old**	Timer controlled by a remote Spec server.

2.92 Spellman DF3/FF3 High Voltage Power Supplies

spellman_df3	**Old**	Controller driver.
spellman_df3_ain	**Old**	Spellman DF3/FF3 analog inputs.
spellman_df3_aout	**Old**	Spellman DF3/FF3 analog outputs.
spellman_df3_din	**Old**	Spellman DF3/FF3 digital inputs.
spellman_df3_dout	**Old**	Spellman DF3/FF3 digital outputs.

2.93 Stanford Research Systems DG645 Digital Delay Generator

dg645	**Working**	Controller driver.
dg645_pulser	**Working**	SRS DG645 pulse generator.
dg645_burst_pulser	**Working**	SRS DG645 pulse generator in burst mode.

2.94 Stanford Research Systems SIM900 Mainframes

sim900	**Working**	Controller driver.
sim900_port	**Working**	SIM900-based serial port.
sim960	**Working**	SIM960 analog PID controller.
sim980	**Working**	SIM980 summing analog input.
sim983	**Working**	SIM983 scaling amplifier.

2.95 Stanford Research Systems SR570 Current Amplifier

sr570	**Working**	SR570 current amplifier.

2.96 Stanford Research Systems SR630 16 Channel Thermocouple Reader

sr630	**Old**	Controller driver.
sr630_ainput	**Old**	SR630 thermocouple input channels.
sr630_aoutput	**Old**	SR630 voltage outputs.

2.97 Struck SIS3801 Multichannel Scaler (via VME)

sis3801	**Working**	Struck SIS3801 multichannel scaler.
sis3801_pulser	**Old**	Struck SIS3801 used as a pulse generator.

2.98 Struck SIS3807 Multichannel Pulse Generator (via VME)

sis3807	**Working**	Controller driver.
sis3807_pulser	**Working**	Struck SIS3807 used as a pulse generator.

2.99 Struck SIS3820 Multichannel Scaler (via VME)

sis3820	**Recently Working**	Struck SIS3820 multichannel scaler.

2.100 Synaccess netBooter Network Power Switch

synaccess_netbooter	**Working**	Controller driver.
synaccess_netbooter_ainput	**Working**	Synaccess netBooter current and temperature measurements.
synaccess_netbooter_relay	**Working**	Synaccess netBooter power outlet as MX relay.

2.101 Systron-Donner M107 DC Voltage Source.

systron_donner_m107	**Old**	DC Voltage as analog output.

2.102 UDT Instruments TRAMP Current Amplifier

udt_tramp	**Old**	UDT TRAMP current amplifier.

2.103 UMX-based Microcontrollers

Currently implemented: *Arduino Mega 2560*

umx_server	**Working**	UMX-based microcontroller server.
umx_ainput	**Working**	UMX analog input.
umx_dinput	**Working**	UMX digital input.
umx_doutput	**Working**	UMX digital output.
umx_pulser	**Working**	UMX pulse generator.

2.104 Velmex VP9000 Motor Controllers

vp9000	**Working**	Controller driver.
vp9000_motor	**Working**	Velmex VP9000 motor axis.

2.105 VME Bus I/O

vme_dinput	**Recently Working**	Read from a VME address.
vme_doutput	**Recently Working**	Write to a VME address.

2.106 Wago 750

Note: Wago 750 series devices support standard MODBUS, but have custom hardware of their own as well.

wago750_modbus_aout	**Old**	Wago 750 MODBUS analog output. Can read back output value.

2.107 Western Telematic Network Power Switch

wti_nps	**Old**	Controller driver.
wti_nps_relay	**Old**	Western Telematic power outlet as an MX relay.

2.108 X10 CM17A (Firecracker) Home Automation Controllers

cm17a	**Old**	Controller driver.
cm17a_doutput	**Old**	X10 CM17A digital output driver.

2.109 XIA HSC-1 Huber Slit Controllers

hsc1	**Old**	Controller driver.
hsc1_motor	**Old**	XIA HSC-1 motor axis.

2.110 XIA PFCU Filter and Shutter Controllers

pfcu	**Working**	Controller driver.
pfcu_filter	**Working**	Controls a single PFCU filter as an MX relay.
pfcu_filter_summary	**Working**	Controls all PFCU filters in one operation.
pfcu_shutter	**Working**	Controls a single PFCU shutter as an MX relay.
pfcu_shutter_timer	**Working**	Controls the exposure time of a PF252 shutter.

2.111 Zaber Motor Controllers

zaber	**Proposed?**	Controller driver.
zaber_motor	**Proposed?**	Controls a single motor axis.

3 MX Dynamically Loaded Modules

3.1 aravis.mxo (Linux)

Aravis is a glib/gobject based library for video acquisition using Genicam cameras. It currently implements the gigabit ethernet and USB3 protocols used by industrial cameras.

aravis	**Working**	Aravis protocol interface.
aravis_camera	**Working**	An MX video input interfaced via Aravis.

3.2 aviex_pccd.mxo (Linux, Win32) *(uses epix_xclib.mxo)*

Controls Aviex and Dexela area detectors created by Steve Naday.

pccd_16080	**Old**	Old BioCAT Aviex detector *(nemesis)*.
pccd_170170	**Working**	Synchrotron Soleil Aviex detector.
pccd_4824	**Old**	ESRF Aviex detector.
pccd_9785	**Recently Working**	BioCAT Dexela detector *(staypuft)*.

3.3 avt_vimba.mxo (Linux.Win32)

Allied Vision Technologies cameras using the Vimba C API.

avt_vimba	**Deferred**	Vimba C API interface.
avt_vimba_camera	**Deferred**	MX video input driver using the AVT Vimba C API.

3.4 bnc725.mxo (Win32)

BNC725 digital delay generator using the vendor-provided Win32 C++ library.

bnc725	**Deferred**	Win32 DLL interface.
bnc725_pulser	**Deferred**	BNC725 pulser.

3.5 cbflib.mxo (Implements "cbflib" extension) (Linux, Win32)

An MX extension module for access to CBFlib. CBFlib is a library of ANSI-C functions providing a way to access CBF and imgCIF crystallography image files.

When finished, *cbflib.mxo* will provide a way of saving MX area detector images in CBF format. *cbflib.mxo* does not contain any MX drivers.

Status: In Progress

3.6 dalsa_gev.mxo (Linux)

A Linux interface to Teledyne DALSA GigE Vision-based cameras, using the Linux-specific Dalsa GeV camera API.

dalsa_gev	**Working**	Dalsa GeV API interface.
dalsa_gev_camera	**Working**	MX video input driver using the Dalsa GeV API on Linux.

3.7 driverlinx_portio.mxo (Win32)

The DriverLINX port I/O driver for 32-bit Windows written by Scientific Software Tools, Inc. 64-bit Windows is not supported.

driverlinx_portio	**Old**	32-bit Windows port I/O interface.

3.8 edt.mxo (Linux)

EDT Camera Link Cameras using the EDTpdv interface.

edt	**Deferred**	EDTpdv interface.
edt_video_input	**Deferred**	MX video input driver for EDT Camera Link cameras.
edt_rs232	**Deferred**	Serial port interface for EDT camera boards.

3.9 epics.mxo (Implements "epics" extension) (Linux, Win32)

EPICS is a control system used widely at a variety of accelerators, telescopes, and other installations. *epics.mxo* only depends on facilities found in EPICS Base.

epics_ainput	**Working**	MX analog input driver that reads from EPICS PVs.
epics_aoutput	**Working**	MX analog output driver that writes to EPICS PVs.
epics_area_detector	**Working**	MX area detector driver for EPICS-controlled area detectors.
epics_ccd	**Obsolete?**	MX area detector driver for the obsolete EPICS CCD record.
epics_dinput	**Working**	MX digital input driver that reads from EPICS PVs.
epics_doutput	**Working**	MX digital output driver that writes to EPICS PVs.
epics_mca	**Working**	MX MCA driver for the EPICS MCA record.
epics_mcs	**Working**	MX MCS driver for the EPICS MCA record.
epics_motor	**Working**	MX motor driver for the EPICS motor record.
epics_scaler	**Working**	MX scaler driver for the EPICS scaler record.
epics_scaler_mce	**Working**	MX MCE driver for "synchronous" reads of EPICS motor and scaler values.
epics_scaler_mcs	**Working**	MX MCS driver for "synchronous" reads of multiple EPICS scaler values.
epics_timer	**Working**	MX timer driver for the EPICS scaler record.
epics_camac	**Old**	MX CAMAC driver for the EPICS CAMAC record.
epics_gpib	**Old**	MX GPIB driver for the old EPICS GPIB record.
epics_rs232	**Old**	MX RS232 driver for the old EPICS RS232 record.
epics_vme	**Recently Working**	MX VME driver for the EPICS VME record.
epics_char	**Working**	
epics_short	**Working**	
epics_long	**Working**	
epics_float	**Working**	
epics_double	**Working**	
epics_string	**Working**	
epics_timeout	**Working**	Provides a way to adjust EPICS timeouts.

3.10 epics_aps.mxo (Linux, Win32) (uses epics.mxo)

EPICS PVs used at the Advanced Photon Source.

aps_gap	**Working**	Gap and taper controls for APS insertion devices.
aps_id_qscan	**Recently Working**	An MX quick scan that synchronizes with APS insertion device motion.
aps_quadem_amplifier	**Recently Working**	APS Quad amplifier used for beam position monitors.
aps_topup_time	**Recently Working**	Remaining time until the next APS topup injection.

3.11 epics_mbc.mxo (Linux, Win32) (uses epics.mxo)

EPICS PVs used at the ALS 4.2.2 beamline at the Advanced Light Source.

mbc_gsc_trigger	**Old**	ALS 4.2.2 beamline trigger using the Goniosync control.
mbc_noir	**Old**	NOIR area detector for the ALS 4.2.2 beamline.
mbc_noir_trigger	**Old**	ALS 4.2.2 beamline trigger using the NOIR detector.

3.12 epics_pmac_biocat.mxo (Linux, Win32) (uses epics.mxo)

A version of *epics_pmac_tc.mxo* that has been modified for use at the APS 18-ID (BioCAT) beamline.

epics_pmac_biocat	**Working**	VME-based PMAC and Turbo PMAC motors controlled via EPICS at the BioCAT beamline.

3.13 epics_pmac_tc.mxo (Linux, Win32) (uses epics.mxo)

EPICS PVs for VME-based PMAC and Turbo PMAC motors written by Tom Coleman for APS-19ID (SBC-CAT)

pmac_tc_motor	**Working**	VME-based PMAC and Turbo PMAC motors controlled via EPICS at the SBC-CAT beamline.

3.14 epix_xclib.mxo (Linux, Win32)

epix_xclib	**Working**	Interface for the EPIX, Inc. XCLIB frame grabber API.
epix_camera_link	**Working**	EPIX Camera Link API for serial I/O.
epix_rs232	**Working**	Serial port interface for EPIX, Inc. video input boards.
epix_xclib_dinput	**Working**	Controls digital inputs for EPIX, Inc. cameras.
epix_xclib_doutput	**Working**	Controls digital outputs for EPIX, Inc. cameras.
epix_xclib_video_input	**Working**	EPIX, Inc. video input.

3.15 esone_camac.mxo (Linux, Win32)

esone_camac	**Old**	CAMAC interface driver that uses an ESONE-standard CAMAC library.

3.16 fastcam_pcclib.mxo (Linux, Win32)

Interface for Photron FASTCAM cameras using the PccLib library.

fastcam_pcclib	**Never Finished**	Interface to the Photron FASTCAM PccLib library.
fastcam_pcclib_camera	**Never Finished**	Photron FASTCAM camera.

3.17 galil_gclib.mxo (Linux, Win32)

Interface for Galil motors controlled using the Gclib library.

galil_gclib	**Working**	Interface to the Galil Gclib library.
galil_gclib_motor	**Working**	Galil Gclib controlled motors.
galil_gclib_ainput	**In Progress**	Galil Gclib controlled analog inputs.
galil_gclib_aoutput	**In Progress**	Galil Gclib controlled analog outputs.
galil_gclib_dinput	**In Progress**	Galil Gclib controlled digital inputs.
galil_gclib_doutput	**In Progress**	Galil Gclib controlled digital outputs.

3.18 k8055.mxo (Linux, Win32)

Controls Velleman K8055 USB experimenter interface boards. Uses either libk8055 or K8055D.DLL.

k8055	**Working**	Interface driver for the Velleman K8055.
k8055_ainput	**Working**	Analog inputs for the Velleman K8055.
k8055_aoutput	**Working**	Analog outputs for the Velleman K8055.
k8055_dinput	**Working**	Digital inputs for the Velleman K8055.
k8055_doutput	**Working**	Digital outputs for the Velleman K8055.
k8055_scaler	**Working**	Scaler for Velleman K8055 counters.
k8055_timer	**Working**	Timer for the Velleman K8055.

3.19 labjack_ux.mxo (Linux, Win32)

Interface for Labjack U3, U6, and U9 USB data acquisition devices.

labjack_ux	**Never Finished**	Interface driver for the Labjack.
labjack_ux_ainput	**Never Finished**	Analog input for the Labjack.
labjack_ux_aoutput	**Never Finished**	Analog output for the Labjack.
labjack_ux_dinput	**Never Finished**	Digital input for the Labjack.
labjack_ux_doutput	**Never Finished**	Digital output for the Labjack.
labjack_ux_scaler	**Never Finished**	Scaler for the Labjack.
labjack_ux_timer	**Never Finished**	Timer for the Labjack.

Status: In Progress

3.20 libtiff.mxo (Implements "libtiff" extension) (Linux, Win32)

An MX extension module for network access using the libTIFF librar.

libtiff.mxo provides a way of saving MX area detector images in TIFF format with TIFF headers used to describe the detector parameters used to take the image. *libtiff.mxo* does not contain any MX drivers.

Status: Working

3.21 libusb-0.1.mxo (Linux)

libusb_01	**Working**	USB interface driver for the old libusb 0.1.12 library.

3.22 linux_portio.mxo

(Linux) A port I/O driver that only works on very old Linux kernels.

linux_portio	**Ancient**	(LINUX) access to I/O ports via the Linux portio driver.

3.23 newport_xps.mxo

Drivers for the Newport XPS-C and XPS-Q series of motion controllers. Uses the source code of a software library provided on Newport's web site. However, since no license is specified, we cannot bundle the Newport code with MX. Instead, the first time this library is built, it automatically downloads the source code from Newport's web site, patches it, and then builds it.

newport_xps	**Working**	Interface driver for the Newport XPS-C and XPS-Q.
newport_xps_motor	**Working**	Newport XPS-C and XPS-Q motor axes.

3.24 ni488.mxo

MX interface driver for National Instruments GPIB interfaces. If HAVE_LINUX_GPIB is set, then the driver can be compiled for use with the driver from http://linux-gpib.sourceforge.net/. The National Instruments module and the Linux GPIB module cannot both be loaded by the same MX process, since the names of the symbols collide.

linux_gpib	**Working**	MX interface driver for the Linux-GPIB package.
ni488	**Working**	MX interface driver for NI488-style GPIB interfaces.

3.25 ni_daqmx.mxo

MX interface driver for devices controlled by the National Instruments DAQmx package. On non-Windows platforms, DAQmx Base is used instead.

ni_daqmx	**Working**	Interface driver for NI DAQmx devices.
ni_daqmx_ainput	**Working**	Analog input for NI DAQmx.
ni_daqmx_aoutput	**Working**	Analog output for NI DAQmx.
ni_daqmx_dinput	**Working**	Digital input for NI DAQmx.
ni_daqmx_doutput	**Working**	Digital output for NI DAQmx.
ni_daqmx_thermocouple	**Working**	Reads temperature for NI DAQmx.

3.26 ni_valuemotion.mxo (Win32)

pcmotion32	**Old**	Interface driver for National Instruments ValueMotion motor controllers.
pcmotion32_motor	**Old**	National Instruments ValueMotion motor axis.

3.27 ortec_umcbi.mxo (Win32)

MX interface to the Ortec A11-B32 interface for communicating with Ortec MCAs.

umcbi	**Old**	Interface to the Ortec A11-B32 library.
trump_mca	**Ancient**	MCA driver for the old EG&G Ortec Trump MCA. Only tested with ISA bus.

3.28 pleora_iport.mxo (Linux, Win32)

MX drivers for the Pleora iPORT series of cameras.

pleora_iport	**Recently Working**	Pleora iPORT camera interface.
pleora_iport_dinput	**Recently Working**	Pleora iPORT digital input.
pleora_iport_doutput	**Recently Working**	Pleora iPORT digital output.
pleora_iport_vinput	**Recently Working**	Pleora iPORT camera.

3.29 pmc_mcapi.mxo (Linux, Win32)

Precision Microcontrol Motion Control API for their series of motor controllers.

pmc_mcapi	**Recently Working**	Precision Microcontrol MCAPI interface.
pmc_mcapi_ainput	**Recently Working**	Precision Microcontrol MCAPI analog input.
pmc_mcapi_aoutput	**Recently Working**	Precision Microcontrol MCAPI analog output.
pmc_mcapi_dinput	**Recently Working**	Precision Microcontrol MCAPI digital input.
pmc_mcapi_doutput	**Recently Working**	Precision Microcontrol MCAPI digital output.
pmc_mcapi_motor	**Recently Working**	Precision Microcontrol MCAPI motor.

3.30 powerpmac.mxo (Linux, Win32)

Delta Tau PowerPMAC motor controllers.

powerpmac	**Working**	PowerPMAC interface driver.
powerpmac_ainput	**Working**	PowerPMAC variable as analog input.
powerpmac_aoutput	**Working**	PowerPMAC variable as analog output.
powerpmac_dinput	**Working**	PowerPMAC variable as digital input.
powerpmac_doutput	**Working**	PowerPMAC variable as digital output.
powerpmac_motor	**Working**	PowerPMAC motor axis.
powerpmac_long	**Working**	PowerPMAC variable treated as an MX long variable.
powerpmac_ulong	**Working**	PowerPMAC variable treated as an MX unsigned long variable.
powerpmac_double	**Working**	PowerPMAC variable treated as an MX double variable.

3.31 radicon_helios.mxo (Linux, Win32) *(uses pleora_iport.mxo)*

Teledyne Radicon Helios 25x20 and 10x10 CMOS detectors.

radicon_helios	Old	Radicon Helios area detector.
radicon_helios_trigger	Old	Generates a trigger for the Radicon Helios area detector.

3.32 radicon_taurus.mxo (Linux, Win32) *(uses sapera_lt.mxo)*

Teledyne Radicon Taurus-based detectors.

radicon_taurus	Working	Radicon Taurus area detector.
radicon_taurus_rs232	Working	Communicates with the Taurus serial port.

3.33 rdi_mbc.mxo (Linux, Win32)

Custom additions for RDI detectors at the Molecular Biology Consortium beamline (ALS 4.2.2).

rdi_mbc_datafile_prefix	Recently Working
rdi_mbc_filename	Recently Working
rdi_mbc_log	Recently Working
rdi_mbc_pathname_builder	Recently Working
rdi_mbc_save_frame	Recently Working
rdi_mbc_string	Recently Working

3.34 sapera_lt.mxo (Linux, Win32)

MX drivers for Teledyne DALSA video capture devices. Note that "frame grabbers" are generally found in PC bus slots, while "cameras" are generally connected via gigabit Ethernet (GigE Vision).

sapera_lt	Working	MX interface driver for the Sapera LT API.
sapera_lt_camera	Working	Sapera LT-based GigE Vision camera.
sapera_lt_frame_grabber	Working	Sapera LT-based Camera Link (?) frame grabbers..

3.35 sis3100.mxo (Linux, Win32)

sis3100	Working	(LINUX) Struck SIS 1100/3100 PCI/CPCI interface to VME.

3.36 site_biocat_toast.mxo (Linux, Win32)

Custom features for BioCAT (APS 18-ID).

biocat_6k_toast	Working	MX oscillation driver for BioCAT that oscillates a Compumotor motor until stopped.
biocat_6k_joystick	Working	Enables or disables BioCAT Compumotor joystick.

3.37 u500.mxo (Win32)

MX drivers for the Aerotech Unidex 500 motor controller.

u500	**Working**	Interface to the vendor-provided Win32 libraries for the Aerotech Unidex 500.
u500_motor	**Working**	Aerotech Unidex 500 motor axis.
u500_rs232	**Working**	Aerotech Unidex 500 driver for sending program lins to the controller.
u500_status	**Working**	Digital input for reading Aerotech Unidex 500 status.
u500_variable	**Working**	Support for reading Aerotech Unidex 499 V variables.

3.38 v4l2_input.mxo (Linux)

An MX driver for using the Linux Video4Linux2 video API.

v4l2_input	**Recently Working**	Video4Linux2 based camera.

3.39 vxi_memacc.mxo (Linux)

vxi_memacc	**Old**	VME access using NI-VISA.

3.40 xglab_dante.mxo (Linux, Win32)

Module wrapper for XGlab DANTE multichannel analyzers.

dante	**Working**	MX interface to the XGlab DANTE library.
dante_mca	**Working**	MCA driver for a single XGlab DANTE MCA channel in Normal (single spectrum) mode.
dante_mcs	**In Progress**	MCS driver for a single XGlab DANTE MCA channel in Mapping (multiple spectra) mode.

3.41 xia_handel.mxo (Linux, Win32) *(Old Version)*

An MX module wrapper for the XIA-provided Handel library for MCAs.

Note: The *xia_handel.mxo* module and the *xia_handel_map.mxo* modules cannot both be loaded at the same time in one MX process. The *xia_handel_map.mxo* is intended to ultimately replace the existing *xia_handel.mxo* module.

handel	**Recently Working**	MX interface to the XIA Handel library.
handel_mca	**Recently Working**	Controls a single MCA in an XIA Handel installation.
handel_input	**Recently Working**	Analog input driver that reads out parameters for XIA Handel-based MCAs.
handel_sum	**Recently Working**	Analog input driver that computes a weighted sum of XIA Handel readings.
handel_timer	**Recently Working**	MX timer driver for XIA Handel-controlled MCAs.

3.42 xia_handel_map.mxo (Linux, Win32)

An MX module wrapper for the XIA-provided Handel library for MCAs. This version implements support MCS-compatible mapping modes.

Note: The *xia_handel.mxo* module and the *xia_handel_map.mxo* modules cannot both be loaded at the same time in one MX process. The *xia_handel_map.mxo* is intended to ultimately replace the existing *xia_handel.mxo* module.

handel	**Working**	MX interface to the XIA Handel library.
handel_mapping_pixel_next	**Working**	Advances MCS-style acquisition to the next measurement *(pixel)*.
handel_mca	**Working**	Controls a single MCA in an XIA Handel installation.
handel_mcs	**In Progress**	Controls a single MCA in an MCS-compatible mapping mode.
handel_input	**Working**	Analog input driver that reads out parameters for XIA Handel-based MCAs.
handel_sum	**Working**	Analog input driver that computes a weighted sum of XIA Handel readings.
handel_timer	**Working**	MX timer driver for XIA Handel-controlled MCAs.

3.43 xineos_gige.mxo (Linux, Win32) *(uses sapera_lt.mxo on Win32)* *(uses dalsa_gev.mxo on Linux)*

Module wrapper for the Teledyne DALSA Xineos GigE-based area detectors.

xineos_gige	**Working**	Teledyne DALSA Xineos GigE-based area detectors.

3.44 Other Possibilities

A few other possibilities for MX modules include:

- AVI PVAPI camera module.
- InpOutx64 might provide x86-64 port I/O access on Windows.
- libusb 1.0 interface driver.
- Measurement Computing devices using the Universal Library API.
- Portaudio wvin and wvout.
- WinUSB interface driver.

4 Amplifiers

aps_adcmod2_amplifier	**Possibly Broken?**	APS ADCMOD2 amplifier.
aps_quadem_amplifier	**Recently Working**	APS Quad amplifier used for beam position monitors.
i404_amp	**Working**	I404 amplifier channel.
keithley428	**Working**	Keithley 428 amplifier.
keithley2400_amp	**Working**	Keithley 2400 amplifiers.
keithley2700_amp	**Working**	Keithley 2700 amplifiers.
network_amplifier	**Working**	Amplifier controlled by a remote MX server.
scipe_amplifier	**Obsolete?**	SCIPE amplifier.
sim983	**Working**	SIM983 scaling amplifier.
soft_amplifier	**Working**	Software emulated amplifier.

sr570	**Working**	SR570 current amplifier.
udt_tramp	**Old**	UDT TRAMP current amplifier.

5 Analog Inputs

aps_adcmod2_ainput	**Possibly Broken?**	APS ADCMOD2 input signal.
bkprecision_ain	**Recently Working**	BK Precision 912x analog inputs.
bluice_dcss_ion_chamber	**Old**	Blu-Ice ion chamber readout as used by a DCSS client.
bluice_dhs_ion_chamber	**Old**	Blu-Ice ion chamber readout as used in a DHS server.
cryojet_ainput	**Old**	Reads analog status values from a Cryojet controller.
cryostream600_status	**Old**	Reads status values from a Cryostream 600 temperature controller.
cxtilt02_angle	**Recently Working**	Angle measurement driver.
epics_ainput	**Working**	MX analog input driver that reads from EPICS PVs.
galil_gclib_ainput	**In Progress**	Galil Gclib controlled analog inputs.
handel_input	**Working**	Analog input driver that reads out parameters for XIA Handel-based MCAs.
handel_sum	**Working**	Analog input driver that computes a weighted sum of XIA Handel readings.
icplus_current	**Old**	Oxford Danfysik IC PLUS input current.
ilm_ainput	**Old**	ILM values returned by the READ command.
iseries_ainput	**Working**	iSeries analog inputs.
itc503_ainput	**Old**	Reads analog status values from an ITC503 controller.
k8055_ainput	**Working**	Analog inputs for the Velleman K8055.
keithley199_ainput	**Working**	Read measurements from a Keithley 199.
keithley2000_ainput	**Old**	Keithley 2000 analog inputs.
keithley2400_ainput	**Working**	Keithley 2400 analog inputs.
keithley2600_ainput	**Working**	Keithley 2600 analog inputs.
ks3512	**Old**	Kinetic Systems KS3512 CAMAC ADC.
mardtb_status	**Possibly Broken?**	Reads out MarDTB parameters.
mca_value	**Working**	MCA-derived values such as ROIs and corrected ROIs.
mca_weighted_sum	**Working**	Weighted sums of MCA ROIs.
mclennan_ain	**Recently Working**	Mclennan analog inputs.
mdrive_ain	**Working**	IMS/Scneider MDrive/MForce analog inputs.
modbus_ainput	**Recently Working**	MODBUS analog inputs.
network_ainput	**Working**	Analog input controlled by a remote MX server.
ni_daqmx_ainput	**Working**	Analog input for NI DAQmx.
ni_daqmx_thermocouple	**Working**	Reads temperature for NI DAQmx.
numato_gpio_ainput	**Working**	Numato Lab GPIO analog inputs.
p6000a	**Recently Working**	Newport Electronics counter/timer as an analog input.
pdi45_ainput	**Old**	Prarie Digital Model 45 analog inputs.
picomotor_ain	**Old**	Picomotor analog input.
pmac_ainput	**Working**	Control PMAC variables as analog inputs.
pmc_mcapi_ainput	**Recently Working**	Precision Microcontrol MCAPI analog input.
powerpmac_ainput	**Working**	PowerPMAC variable as analog input.
qbpm_current	**Old**	Oxford Danfysik QBPM input current.
scipe_ain	**Obsolete?**	SCIPE analog inputs.
si9650_status	**Never Finished**	Reads status values from a Scientific Instruments 9650 temperature controller.

sim980	**Working**	SIM980 summing analog input.
soft_ainput	**Working**	Software emulated analog input.
smartmotor_ain	**Recently Working**	Smartmotor analog inputs.
spellman_df3_ain	**Old**	Spellman DF3/FF3 analog inputs.
synaccess_netbooter_ainput	**Old**	Synaccess netBooter current and temperature measurements.
tpg262_	**Old**	Pfeiffer TPG 261/262 pressure reading.
tracker_ain	**Old**	Data Track Tracker analog inputs.
umx_ainput	**Working**	UMX analog input.

6 Analog Outputs

bkprecision_aout	**Recently Working**	BK Precision 912x analog outputs.
cryojet_aoutput	**Old**	Controls analog settings for a Cryojet controller.
cyberstar_x1000_aout	**Working**	Cyberstar X1000 analog outputs for high voltage and delay.
epics_aoutput	**Working**	MX analog output driver that writes to EPICS PVs.
galil_gclib_aoutput	**In Progress**	Galil Gclib controlled analog outputs.
icplus_voltage	**Old**	Oxford Danfysik IC PLUS high voltage.
ilm_sample_rate	**Old**	Change sample rate of ILM controller.
iseries_aoutput	**Working**	iSeries analog outputs.
itc503_aoutput	**Old**	Controls analog settings for an ITC503 controller.
k8055_aoutput	**Working**	Analog outputs for the Velleman K8055.
keithley2400_aoutput	**Working**	Keithley 2400 analog outputs.
keithley2600_aoutput	**Working**	Keithley 2600 analog outputs.
keithley2700_aoutput	**Working**	Keithley 2700 analog outputs.
ks3112	**Old**	Kinetic Systems KS3112 CAMAC DAC.
linkam_t9x_pump	**Old**	Pump control part of T9x controllers.
mclennan_aout	**Recently Working**	Mclennan analog outputs.
modbus_aoutput	**Recently Working**	MODBUS analog outputs.
network_aoutput	**Working**	Analog output controlled by a remote MX server.
ni_daqmx_aoutput	**Working**	Analog output for NI DAQmx.
pdi45_aoutput	**Old**	Prarie Digital Model 45 analog outputs.
pmac_aoutput	**Working**	Control PMAC variables as analog outputs.
pmc_mcapi_aoutput	**Recently Working**	Precision Microcontrol MCAPI analog output.
powerpmac_aoutput	**Working**	PowerPMAC variable as analog output.
qbpm_voltage	**Old**	Oxford Danfysik QBPM high voltage.
scipe_aout	**Obsolete?**	SCIPE analog outputs.
smartmotor_aout	**Recently Working**	Smartmotor analog outputs.
soft_aoutput	**Working**	Software emulated analog output.
spellman_df3_aout	**Old**	Spellman DF3/FF3 analog outputs.
systron_donner_m107	**Old**	DC Voltage as analog output.
tracker_aout	**Old**	Data Track Tracker analog outputs.

7 Area Detectors

bluice_dcss_area_detector	**Old**	Blu-Ice area detector as used by a DCSS client.
bluice_dhs_area_detector	**Old**	Blu-Ice area detector as used in a DHS server.
eiger	**In Progress**	Dectris EIGER area detectors.
epics_area_detector	**Working**	MX area detector driver for EPICS-controlled area detectors.
epics_ccd	**Obsolete?**	MX area detector driver for the obsolete EPICS CCD record.
mar345	**Never Finished**	Mar345 image plate control.
marccd	**Working**	MarCCD area detector interface started from the MarCCD GUI.
marccd_server_socket	**Working**	MarCCD area detector control via MarUSA-provided server socket program.
mbc_noir	**Old**	NOIR area detector for the ALS 4.2.2 beamline.
merlin_medipix	**Working**	Merlin Medipix area detectors.
mlfsom	**Obsolete?**	Intended to use the mlfsom package.
network_area_detector	**Working**	Area detector controlled by a remote MX server.
pccd_16080	**Old**	Old BioCAT Aviex detector *(nemesis)*.
pccd_170170	**Working**	Synchrotron Soleil Aviex detector.
pccd_4824	**Old**	ESRF Aviex detector.
pccd_9785	**Recently Working**	BioCAT Dexela detector *(staypuft)*.
pilatus	**Working**	Dectris Pilatus area detectors.
radicon_helios	**Old**	Radicon Helios area detector.
soft_area_detector	**Working**	Software-emulated area detector that uses an MX video input to get frames.
xineos_gige	**Working**	Teledyne DALSA Xineos GigE-based area detectors.

7.1 Devices usable with all MCSs

area_detector_timer	**Working**	Used to control MX area detector timers.

8 Autoscale Devices

Autoscale devices are used to manage the acquisition of data from a signal source that has a wide dynamic range like a powder diffraction peak. The idea is that the signal detector has a range of signal strengths over which it works best. If the input signal goes out of that range, the autoscale device arranges to change the input signal strength to bring it back into the ideal range. This is done by changing an amplifier gain or inserting/removing filters, and so forth. The signal reported by the MX driver is then rescaled to produce gain-independent signal values allowing you to record the signal (like a powder diffraction peak) with satisfactory precision over the full dynamic range.

autoscale_amp	**Old**	Changes the amplifier gain to adjust the signal strength.
autoscale_filter	**Old**	Inserts/removes filters to adjust the signal strength.
autoscale_filter_amp	**Old**	This autoscale device can simultaneously use both gain and filter changes.
autoscale_net	**Working**	Autoscale device controlled by a remote MX server.

9 Digital Inputs

ainput_as_dinput	**Working**	Treat an analog input as a digital input.
bkprecision_din	**Recently Working**	BK Precision 912x digital inputs.

compumotor_din	**Working**	Compumotor 6000/6K digital input.
digital_fanin	**Working**	Compute a logical function of several MX record fields (and, or, xor).
epics_dinput	**Working**	MX digital input driver that reads from EPICS PVs.
epix_xclib_dinput	**Working**	Controls digital inputs for EPIX, Inc. cameras.
galil_gclib_dinput	**In Progress**	Galil Gclib controlled digital inputs.
i8255_in	**Old**	Intel 8255 8-bit digital input.
icplus_din	**Old**	Oxford Danfysik IC PLUS digital input.
ilm_status	**Old**	ILM status values from the X command.
iseries_dinput	**Working**	iSeries digital inputs.
k8055_dinput	**Working**	Digital inputs for the Velleman K8055.
ks3063_in	**Old**	Kinetic Systems KS3063 digital input.
linux_parport_in	**Working**	(LINUX) Parallel port as digital input.
lpt_in	**Old**	LPT printer port as an 8-bit digital input.
mclennan_din	**Recently Working**	Mclennan digital inputs.
mdrive_din	**Working**	IMS/Schneider MDrive/MForce digital inputs.
modbus_dinput	**Recently Working**	MODBUS digital inputs.
network_dinput	**Working**	Digital input controlled by a remote MX server.
ni_daqmx_dinput	**Working**	Digital input for NI DAQmx.
numato_gpio_dinput	**Working**	Numato Lab GPIO digital inputs.
pdi45_dinput	**Old**	Prarie Digital Model 45 digital inputs.
pmac_dinput	**Working**	Control PMAC variables as digital inputs.
pmc_mcapi_dinput	**Recently Working**	Precision Microcontrol MCAPI digital input.
picomotor_din	**Old**	Picomotor digital intput.
pleora_iport_dinput	**Recently Working**	Pleora iPORT digital input.
powerpmac_dinput	**Working**	PowerPMAC variable as digital input.
qbpm_din	**Old**	Oxford Danfysik QBPM digital input.
scipe_din	**Obsolete?**	SCIPE digital inputs.
smartmotor_din	**Recently Working**	Smartmotor digital inputs.
soft_dinput	**Working**	Software emulated digital input.
spellman_df3_din	**Old**	Spellman DF3/FF3 digital inputs.
tracker_din	**Old**	Data Track Tracker digital inputs.
u500_status	**Working**	Digital input for reading Aerotech Unidex 500 status.
umx_dinput	**Working**	UMX digital input.
vme_dinput	**Working**	Read from a VME address.

10 Digital Outputs

aoutput_as_doutput	**Working**	Use an analog output to generate digital output signals.
bkprecision_dout	**Recently Working**	BK Precision 912x digital outputs.
cm17a_doutput	**Old**	X10 CM17A digital output driver.
compumotor_dout	**Working**	Compumotor 6000/6K digital output.
cryojet_doutput	**Old**	Controls digital settings for a Cryojet controller.
digital_fanout	**Working**	Forward a digital output value to several MX record fields.
epics_doutput	**Working**	MX digital output driver that writes to EPICS PVs.
epix_xclib_doutput	**Working**	Controls digital outputs for EPIX, Inc. cameras.

galil_gclib_doutput	**In Progress**	Galil Gclib controlled digital outputs.
handel_mapping_pixel_next	**Working**	Advances MCS-style acquisition to the next measurement *(pixel)*.
i8255_out	**Old**	Intel 8255 8-bit digital output.
icplus_dout	**Old**	Oxford Danfysik IC PLUS digital output.
iseries_doutput	**Working**	iSeries digital outputs.
itc503_doutput	**Old**	Controls digital settings for an ITC503 controller.
k8055_doutput	**Working**	Digital outputs for the Velleman K8055.
keithley2400_doutput	**Working**	Keithley 2400 digital outputs.
ks3063_out	**Old**	Kinetic Systems KS3063 digital output.
linux_parport_out	**Working**	(LINUX) Parallel port as digital output.
lpt_out	**Old**	LPT printer port as an 8-bit digital output.
mclennan_dout	**Recently Working**	Mclennan digital outputs.
mdrive_dout	**Working**	IMS/Schneider MDrive/MForce digital outputs.
modbus_doutput	**Recently Working**	MODBUS digital outputs.
network_doutput	**Working**	Digital output controlled by a remote MX server.
ni_daqmx_doutput	**Working**	Digital output for NI DAQmx.
numato_gpio_doutput	**Working**	Numato Lab GPIO digital outputs.
pdi45_doutput	**Old**	Prarie Digital Model 45 digital outputs.
pmc_mcapi_doutput	**Recently Working**	Precision Microcontrol MCAPI digital output.
pfcu_filter_summary	**Working**	Controls all PFCU filters in one operation.
picomotor_dout	**Old**	Picomotor digital output.
pleora_iport_doutput	**Recently Working**	Pleora iPORT digital output.
pmac_doutput	**Working**	Control PMAC variables as digital outputs.
powerpmac_doutput	**Working**	PowerPMAC variable as digital output.
qbpm_dout	**Old**	Oxford Danfysik QBPM digital output.
relay_as_doutput	**Working**	Treat a relay as a digital output.
scipe_dout	**Obsolete?**	SCIPE digital outputs.
smartmotor_dout	**Recently Working**	Smartmotor digital outputs.
soft_doutput	**Working**	Software emulated digital output.
spellman_df3_dout	**Old**	Spellman DF3/FF3 digital outputs.
tracker_dout	**Old**	Data Track Tracker digital outputs.
umx_doutput	**Working**	UMX digital output.
vme_doutput	**Working**	Write to a VME address.

11 Encoders

ks3640	**Old**	Kinetic Systems KS3640 CAMAC up/down counter as MX encoder.

12 Motors

aps_gap	**Working**	Gap and taper controls for APS insertion devices.
bluice_dcss_motor	**Old**	Blu-Ice motor as used by a DCSS client.
bluice_dhs_motor	**Old**	Blu-Ice motor as used in a DHS server.
compumotor	**Working**	Compumotor 6000/6K motor axis.

compumotor_lin	**Working**	Compumotor 6000/6K linear interpolation moves of several motors.
cryojet_motor	**Old**	Controls a Cryojet temperature controller as if it were a motor.
cryostream600_motor	**Old**	Controls a Cryostream 600 temperature controller as if it is a motor.
d8_motor	**Old**	Bruker D8 motor axis.
dac_motor	**Working**	Control an MX analog output as if it were a motor.
databox_motor	**Old**	Radix Databox motor axis.
disabled_motor	**Working**	Disabled motor.
e500	**Old**	DSP E500 motor axis.
e662	**Old**	Physik Instrumente E-662 LVPTz motor axis.
epics_motor	**Working**	MX motor driver for the EPICS motor record.
epics_pmac_biocat	**Working**	VME-based PMAC and Turbo PMAC motors controlled via EPICS at the BioCAT be
esp_motor	**Working**	Newport ESP300/ESP301 motor axis.
galil_gclib_motor	**Working**	Galil Gclib controlled motors.
hsc1_motor	**Old**	XIA HSC-1 motor axis.
itc503_motor	**Old**	Controls an ITC503 temperature controller as if it were a motor.
kohzu_sc_motor	**Working**	Kohzu SC-200/400/800 motor axis.
linkam_t9x_motor	**Old**	Motion control part of T9x controllers.
linkam_t9x_temp	**Old**	Temperature control part of T9x controllers.
ls330_motor	**Working**	LakeShore 330 temperature as a motor.
mardtb_motor	**Possibly Broken?**	MarDTB motor axis.
mclennan	**Recently Working**	Mclennan PM600 and PM304 motor axis.
mcu2	**Working**	ACS MCU-2 motor axis.
mdrive	**Working**	IMS/Schneider MDrive/MForce motor axes.
mm3000_motor	**Old**	Newport MM3000 motor axis.
mm4000_motor	**Old**	Newport MM4000/MM4005 motor axis.
mmc32	**Old**	NSLS MMC32 motor axis.
network_motor	**Working**	Motor axis controlled by a remote MX server.
panther_he	**Old**	IMS Panther HE motor axis.
panther_hi	**Old**	IMS Panther HI motor axis.
pcstep_motor	**Old**	nuLogic/NI PC-Step motor axis..
pdi40_motor	**Old**	PDI 40 motor axis.
phidget_old_stepper	**Old**	Phidget stepper axis (old non-HID).
picomotor	**Old**	Picomotor motor axis.
pm304	**Old**	PM304 motor axis.
pmac_motor	**Working**	PMAC motor axis.
pmac_cs_axis	**Working**	PMAC coordinate system axis.
pmac_tc_motor	**Working**	VME-based PMAC and Turbo PMAC motors controlled via EPICS at the SBC-CAT b
pmc_mcapi_motor	**Recently Working**	Precision Microcontrol MCAPI motor.
powerpmac_motor	**Working**	PowerPMAC motor axis.
ptz_motor	**Recently Working**	Motor axis for an MX Pan/Tilt/Zoom controller.
scipe_motor	**Obsolete?**	SCIPE motor axis.
si9650_motor	**Never Finished**	Controls a Scientific Instruments 9650 temperature controller as if it were a motor.
sim960	**Working**	SIM960 analog PID controller.
smartmotor	**Recently Working**	Smartmotor motor axis.
smc24	**Old**	Joerger SMC24 motor axis.
soft_motor	**Working**	Software emulated motor.

spec_motor	**Old**	Motor axis controlled by a remote Spec server.
stp100_motor	**Old**	Pontech STP100 motor axis.
u500_motor	**Working**	Aerotech Unidex 500 motor axis.
uglide_motor	**Working**	OSS μ-GLIDE motor axis.
vp9000_motor	**Working**	Velmex VP9000 motor axis.
vme58_motor	**Never Finished**	OMS VME58 motor axis.

12.1 Pseudomotors

adsc_two_theta	**Working**	Controls the 2θ angle of an ADSC Quantum 210 by changing the detector height.
aframe_det_motor	**Working**	Pseudomotors for a Rosenbaum-style A-frame area detector mount.
als_dewar_positioner	**Old**	Used for old ALS sample changing robot.
coordinated_angle	**Working**	Coordinates the moves of several motors to maintain them all at the same relative angle.
cubic_spline_motor	**Working**	Moves a motor to a position that is a cubic spline function of another motor.
delta_motor	**Working**	Moves one motor relative to another motor or an MX variable.
elapsed_time	**Working**	A "motor" that uses wall clock elapsed time as its "position". Useful for scans.
energy_motor	**Working**	Energy pseudomotor for n Monochromator.
gated_backlash	**Working**	A pseudomotor that arranges for a gate signal to be generated when a backlash is in proress.
limited_move	**Working**	A pseudomotor that limits the magnitude of relative moves.
linear_function	**Working**	A pseusomotor whose position is a linear function of several real motors.
monochromator	**Working**	Monochromator control that moves groups of motors to positions that depend on X-ray θ.
polynomial_motor	**Working**	Moves a motor to a position that is a polynomial function of another motor.
q_motor	**Working**	Pseudomotor for momentum transfer $q = (4\pi \sin(\theta)/\lambda$.
record_field_motor	**Working**	A pseudomotor implemented in terms of other MX record fields.
segmented_move	**Working**	Breaks up a long move into a series of short moves.
sine_arm	**Working**	Performs a sine arm rotation.
slit_motor	**Working**	Slit center and slit width pseudomotors for a slit made using individual slit blades.
table_motor	**Working**	This pseudomotor performs roll/pitch/yaw moves for an X-ray table support.
tangent_arm	**Working**	Performs a tangent arm rotation.
theta_2theta	**Working**	Moves a $\theta - 2\theta$ pair of motors.
translation_mtr	**Working**	Moves a group of motors all by the same amount.
wavelength_motor	**Working**	Wavelength pseudomotor for a Monochromator.
wavenumber_motor	**Working**	Wavenumber pseudomotor for a Monochromator.
xafs_wavenumber	**Working**	XAFS electron wavenumber k computed from $E_\gamma = E_{edge} + (\hbar^2 k^2)/(2m_e)$.

13 Multichannel Analog Inputs

i404_mcai	**Working**	I404 reads out all 4 channels.
network_mcai	**Working**	Multichannel analog input controlled by a remote MX server.
qbpm_mcai	**Old**	Oxford Danfysik QBPM reads out all 4 channels.

13.1 Devices usable with all MCAIs

mcai_function	**Working**	Computes a linear function of the values from an MCAI device.

14 Multichannel Analyzers

amptek_dp4_mca	**Deferred**	Amptek DP4 multichannel analyzers.
amptek_dp5_mca	**Working**	Amptek DP5 multichannel analyzers.
dante_mca	**Working**	A single XGlab DANTE MCA channel in Normal (single spectrum) mode.
epics_mca	**Working**	MX MCA driver for the EPICS MCA record.
handel_mca	**Working**	Controls a single MCA in an XIA Handel installation.
monte_carlo_mca	**Working**	Software emulated multichannel analyzer using simple Monte Carlo calculations.
network_mca	**Working**	Multichannel analyzer controlled by a remote MX server.
roentec_rcl_mca	**Working**	Roentec MCAs using the RCL 2.2 command language.
soft_mca	**Working**	Software emulated multichannel analyzer.
trump_mca	**Ancient**	MCA driver for the old EG&G Ortec Trump MCA. Only tested with ISA bus.

14.1 Devices usable with all MCAs

mca_alt_time	**Working**	Reads alternate MCA times (real/live) as a scaler.
mca_channel	**Working**	Reads an individual MCA channel as a scaler.
mca_roi_integral	**Working**	Reads an individual MCA ROI integral as a scaler.
mca_timer	**Working**	Used to control MX MCA timers.
mca_value	**Working**	MCA-derived values such as ROIs and corrected ROIs.
mca_weighted_sum	**Working**	Weighted sums of MCA ROIs.

15 Multichannel Encoder

databox_mce	**Old**	Reports stored Radix Databox motor positions.
epics_scaler_mce	**Working**	MX MCE driver for “synchronous” reads of EPICS motor and scaler values.
mcs_mce	**Working**	Computes incremental changes in position from differences between two MCS channels.
mcs_time_mce	**Working**	Reports the elapsed MCS time as a multichannel encoder array.
network_mce	**Working**	Multichannel encoder controlled by a remote MX server.
pmac_mce	**Working**	Records the position of a PMAC motor in a pair of multichannel scaler channels.
soft_mce	**Never Finished**	Uses an OS thread to periodically record motor positions.

16 Multichannel Scalers

dante_mcs	**In Progress**	MCS driver for a DANTE MCA channel in Mapping (multiple spectra) mode.
databox_mcs	**Old**	Radix Databox MCS.
epics_mcs	**Working**	MX MCS driver for the EPICS MCA record.
epics_scaler_mcs	**Working**	MX MCS driver for “synchronous” reads of multiple EPICS scaler values.
handel_mcs	**In Progress**	Controls a single MCA in an MCS-compatible mapping mode.
network_mcs	**Working**	Multichannel scaler controlled by a remote MX server.
sis3801	**Working**	Struck SIS3801 multichannel scaler.
sis3820	**Recently Working**	Struck SIS3820 multichannel scaler.
soft_mcs	**Working**	Software emulated multichannel scaler.

16.1 Pseudo MCS

scaler_function_mcs	**Working**	MX pseudo MCS for MX scaler function pseudoscalers.

16.2 Devices usable with all MCSs

mcs_mce	**Working**	Computes incremental changes in position from differences between two MCS channels.
mcs_scaler	**Working**	Reads an individual MCS channel as a scaler.
mcs_time_mce	**Working**	Reports the elapsed MCS time as a multichannel encoder array.
mcs_timer	**Working**	Used to control MX MCS timers.

17 Pan/Tilt/Zoom Controllers

hitachi_kp_d20	**Working**	Hitachi KP-D20A/B pan/tilt/zoom controller.
network_ptz	**Working**	Pan/Tilt/Zoom device controlled by a remote MX server.
panasonic_kx_dp702_ptz	**Old**	Panasonic KX-DP702 pan/tilt/zoom driver.
sony_visca_ptz	**Old**	Sony VISCA-based pan/tilt/zoom controller.

17.1 Devices usable with all PTZs

ptz_motor	**Recently Working**	Motor axis for an MX Pan/Tilt/Zoom controller.

18 Pulse Generators

bnc725_pulser	**Deferred**	BNC725 pulser.
dg645_pulser	**Working**	SRS DG645 pulse generator.
dg645_burst_pulser	**Working**	SRS DG645 pulse generator in burst mode.
digital_output_pulser	**Working**	Pulse generator that uses an MX digital output and operating system (OS) timers.
gittelsohn_pulser	**Working**	Arduino Teensy-based pulse generator from Mark Gittelsohn.
mbc_gsc_trigger	**Old**	ALS 4.2.2 beamline trigger using the Goniosync control.
mbc_noir_trigger	**Old**	ALS 4.2.2 beamline trigger using the NOIR detector.
network_pulser	**Working**	Pulse generator controlled by a remote MX server.
pdi45_pulser	**Old**	PDI45 pulse generator.
radicon_helios_trigger	**Old**	Generates a trigger for the Radicon Helios area detector.
relay_pulser	**Working**	Treat a relay as a pulse generator.
sis3801_pulser	**Old**	Struck SIS3801 used as a pulse generator.
sis3807_pulser	**Working**	Struck SIS3807 used as a pulse generator.
umx_pulser	**Working**	UMX pulse generator.

19 Relays

blind_relay	**Working**	Relay using an MX digital output with no feedback.
generic_relay	**Working**	Relay using an MX digital output with status read from an MX digital I/O.
marccd_shutter	**Working**	Controls MarCCD shutter.
mardtb_shutter	**Possibly Broken?**	Controls MarDTB shutter.
network_relay	**Working**	Relay controlled by a remote MX server.
pfcu_filter	**Working**	Controls a single PFCU filter as an MX relay.
pfcu_shutter	**Working**	Controls a single PFCU shutter as an MX relay.
pulsed_relay	**Working**	Like a *generic_relay*, but active only for a requested pulse time.
synaccess_netbooter_relay	**Old**	Synaccess netBooter power outlet as MX relay.
wti_nps_relay	**Old**	Western Telematic power outlet as an MX relay.

20 Sample Changers

network_sample_changer	**Working**	Sample changer controlled by a remote MX server.
sercat_als_robot	**Old**	Old SERCAT sample changing robot.
soft_sample_changer	**Working**	Software-emulated sample changer.

21 Scalers

databox_scaler	**Old**	Radix Databox scaler channel.
epics_scaler	**Working**	MX scaler driver for the EPICS scaler record.
function_generator_scaler	**Working**	Software emulated scaler that acts like a function generator.
gm10_scaler	**Old**	Black Cat Systems GM-10 scaler.
k8055_scaler	**Working**	Scaler for Velleman K8055 counters.
ks3610	**Old**	Kinetic Systems KS3610 scaler.
mca_alt_time	**Working**	Reads alternate MCA times (real/live) as a scaler.
mca_channel	**Working**	Reads an individual MCA channel as a scaler.
mca_roi_integral	**Working**	Reads an individual MCA ROI integral as a scaler.
mcs_scaler	**Working**	Reads an individual MCS channel as a scaler.
network_scaler	**Working**	Scaler controlled by a remote MX server.
ortec974_scaler	**Old**	Ortec 974 scaler channel.
pdi45_scaler	**Never Finished**	PDI45 digital outputs.
qs450	**Old**	DSP QS450 scaler.
scipe_scaler	**Obsolete?**	SCIPE scaler.
soft_scaler	**Working**	Software emulated scaler that reads scaler values from a precomputed table.
spec_scaler	**Old**	Scaler channel controlled by a remote Spec server.
vsc16_scaler	**Old**	Joerger VSC16 scaler channel.

21.1 Pseudoscalers

autoscale_scaler	**Working**	Scaler that changes the amplifier's gain if the signal exceeds limits.
gain_tracking_scaler	**Working**	Scaler whose gain tracks changes made by the **autoscale_scaler**.
scaler_function	**Working**	Returns a value that is a linear function of several real scalers and variables.

22 Single Channel Analyzers

cyberstar_x1000	**Working**	Cyberstar X1000 as a single channel analyzer.
network_sca	**Working**	Single channel analyzer controlled by a remote MX server.
soft_sca	**Working**	Software emulated single channel analyzer.

23 Tables

adc_table	**Old**	Originally used for an ADC diffractometer support table at APS Sector 17.

24 Timers

area_detector_timer	**Working**	Used to control MX area detector timers.
bluice_dcss_timer	**Old**	Blu-Ice timer as used by a DCSS client.
bluice_dhs_timer	**Old**	Blu-Ice timer as used in a DHS server.
databox_timer	**Old**	Radix Databox timer.
epics_timer	**Working**	MX timer driver for the EPICS scaler record.
gm10_timer	**Old**	Black Cat Systems GM-10 timer.
handel_timer	**Working**	MX timer driver for XIA Handel-controlled MCAs.
interval_timer	**Working**	Uses an MX OS interval timer as a timer.
k8055_timer	**Working**	Timer for the Velleman K8055.
mca_timer	**Working**	Used to control MX MCA timers.
mcs_timer	**Working**	Used to control MX MCS timers.
network_timer	**Working**	Timer controlled by a remote MX server.
ortec974_timer	**Old**	Ortec 974 timer channel.
pdi45_timer	**Old**	PDI45 digital outputs.
pfcu_shutter_timer	**Working**	Controls the exposure time of a PF252 shutter.
rtc018	**Old**	DSP RTC-018 timer.
scipe_timer	**Obsolete?**	SCIPE timer.
soft_timer	**Working**	Software emulated timer that uses OS timer ticks for timing.
spec_timer	**Old**	Timer controlled by a remote Spec server.
timer_fanout	**Working**	Controls multiple MX timers as if they were one timer.
vsc16_timer	**Old**	Joerger VSC16 timer channel.

25 Video Inputs

aravis_camera	**Working**	An MX video input interfaced via Aravis.
avt_vimba_camera	**Deferred**	MX video input driver using the AVT Vimba C API.
dalsa_gev_camera	**Working**	MX video input driver using the Dalsa GeV API on Linux.
edt_video_input	**Deferred**	MX video input driver for EDT Camera Link cameras.
epix_xclib_video_input	**Working**	EPIX, Inc. video input.
fastcam_pcclib_camera	**Never Finished**	Photron FASTCAM camera.

file_vinput	**Working**	Emulated video input that reads image frames from a directory of existing image fi
network_vinput	**Working**	Video input controlled by a remote MX server.
pleora_iport_vinput	**Recently Working**	Pleora iPORT camera.
sapera_lt_camera	**Working**	Sapera LT-based GigE Vision camera.
sapera_lt_frame_grabber	**Working**	Sapera LT-based Camera Link (?) frame grabbers..
soft_vinput	**Working**	Software-emulated video input with selectable image patterns.
sony_snc	**Never Finished**	Sony network camera.
v4l2_input	**Recently Working**	Video4Linux2 based camera.

26 Waveform Input

network_wvin	**Working**	Waveform input controlled by a remote MX server.

27 Waveform Outputs

bkprecision_wvout	**Recently Working**	BK Precision 912x waveform outputs.
network_wvout	**Working**	Waveform output controlled by a remote MX server.

28 Variables

28.1 Aerotech U500 Variables

Controls V variables in a U500 controller.

u500_variable	**Working**	Support for reading Aerotech Unidex 500 V variables.

28.2 Blu-Ice Specific Variables

bluice_dcss_operation	**Old**	Used by DCSS client to interact with a Blu-Ice operation.
bluice_dhs_operation	**Old**	Used by DHS server to interact with a Blu-Ice operation.
bluice_self_operation	**Old**	Used by a Blu-Ice process to interact with itself.
bluice_dcss_string	**Old**	Used by DCSS client to receive a Blu-Ice variable.
bluice_dhs_string	**Old**	Used by DHS server to receive a Blu-Ice variable.
bluice_self_string	**Old**	Used by a Blu-Ice process to receive a variable from itself.
bluice_command	**Old**	Used by DCSS client to send a command to Blu-Ice.
bluice_master	**Old**	Used by DCSS client to become Blu-Ice master.

28.3 Calculation Variables

indirect_string	**Working**	Constructs a string containing values read from several MX record fields.
mathop	**Working**	A method for calculating values read from several MX record fields.
position_select	**Working**	Selects from a list of motor positions. Used to switch between Pt and Rh mirror stripes.

28.4 Field Variables

Variables belonging to another MX record field in the same process.

field_bool	**Working**	
field_char	**Working**	
field_uchar	**Working**	
field_short	**Working**	
field_ushort	**Working**	
field_long	**Working**	
field_ulong	**Working**	
field_hex	**Working**	
field_int64	**Working**	
field_uint64	**Working**	
field_float	**Working**	
field_double	**Working**	
field_string	**Working**	
field_record	**Working**	A reference to a record in another MX record.

28.5 EPICS Variables *(from epics.mxo)*

Read/write EPICS PVs.

aps_topup_time	**Recently Working**	Remaining time until the next APS topup injection.
epics_char	**Working**	
epics_short	**Working**	
epics_long	**Working**	
epics_float	**Working**	
epics_double	**Working**	
epics_string	**Working**	

28.6 File Variables

Variables used to read or write named pipes or Linux /proc, /sys, etc. variables.

file_double	**Old**
file_long	**Old**
file_ulong	**Old**
file_string	**Old**

28.7 Inline Variables

Variables that are local to your process.

bool	**Working**
char	**Working**
uchar	**Working**

short	**Working**	
ushort	**Working**	
long	**Working**	
ulong	**Working**	
int64	**Working**	
uint64	**Working**	
float	**Working**	
double	**Working**	
string	**Working**	
record	**Working**	A reference to another record in the process.

28.8 Network Variables

Variables controlled by a remote MX server.

net_bool	**Working**	
net_char	**Working**	
net_uchar	**Working**	
net_short	**Working**	
net_ushort	**Working**	
net_long	**Working**	
net_ulong	**Working**	
net_int64	**Working**	
net_uint64	**Working**	
net_float	**Working**	
net_double	**Working**	
net_string	**Working**	
net_record	**Working**	A reference to a record in a remote MX server.

28.9 PMAC Variables

Variables controlled by a PMAC or Turbo PMAC motor controller.

pmac_double	**Working**
pmac_long	**Working**
pmac_ulong	**Working**

28.10 PowerPMAC Variables

Variables controlled by a PMAC or Turbo PMAC motor controller.

powerpmac_long	**Working**	PowerPMAC variable treated as an MX long variable.
powerpmac_ulong	**Working**	PowerPMAC variable treated as an MX unsigned long variable.
powerpmac_double	**Working**	PowerPMAC variable treated as an MX double variable.

28.11 Spec Variables

Variables controlled by a remote Spec server.

spec_char	**Old**	
spec_uchar	**Old**	
spec_short	**Old**	
spec_ushort	**Old**	
spec_long	**Old**	
spec_ulong	**Old**	
spec_int64	**Old**	
spec_uint64	**Old**	
spec_float	**Old**	
spec_double	**Old**	
spec_string	**Old**	

28.12 Special Variables

Special purpose variables.

fix_regions	**Working**	Used to perform simple image corrections to area detector or video input images.

29 Scans

29.1 Linear Scans

input_scan	**Working**	A scan that periodically reads input devices without moving anything.
motor_scan	**Working**	Motor step scans that can be multidimensional.
relative_scan	**Working**	Motor step scans specified relative to the current motor position(s).
pseudomotor_scan	**Working**	Step scans various pseudomotor types while correcting for move errors.
2theta_scan	**Old**	A $\theta - 2\theta$ scan.
slit_scan	**Old**	Step scans slit pseudomotors. *(Replaced by pseudomotor_scan)*

29.2 List Scans

file_list_scan	**Old**	Reads requested measurement times and motor positions from a file.

29.3 XAFS Scans

xafs_scan	**Working**	Multiregion XAFS scans with different measurement times in different regions.
xafs_k_power_law_scans	**Working**	Like an *xafs_scan* but with k power law measurement times.

29.4 Quick Scans *(Slew, Fly, ...)*

aps_id_qscan	**Recently Working**	An MX quick scan that synchronizes with APS insertion device motion.
mcs_qscan	**Working**	Multichannel scaler-based quick scans.
energy_mcs_qscan	**Working**	Multichannel scaler-based quick scans of the *energy* pseudomotor.

29.5 Area Detector Scans

wedge_scan	**Old**	An area detector step scan with wedges 180 degrees apart to do wear leveling of crystal X-ray damage.

30 Servers

30.1 MX Network Servers

tcp_server	**Working**	TCP/IP connection to an MX server.
tcpip_server	**Working**	An alias for *tcp_server*.
unix_server	**Working**	Unix domain socket connection to an MX server.
umx_server	**In Progress**	RS-232 style connection to a UMX microcontroller or the ASCII port of an MX server.

30.2 Blu-Ice Servers

bluice_dcss_server	**Old**	Client connection to a Blu-Ice DCSS server.
bluice_dhs_server	**Old**	Client connection of an MX process pretending to be DCSS to a Blu-Ice DHS server.
bluice_dhs_manager	**Old**	Manages connection attempts by DHS servers to an MX process pretending to be DCSS.

30.3 Spec Servers

spec_server	**Old**	Client connection to a remote Spec server.

31 Operations

Operations refer to long running sequences of events that can be started or stopped.

network_operation	**Working**	An operation controlled by a remote MX server.
toast	**Working**	Oscillate a motor back and forth to evenly distribute X-ray dose for a sample.

32 "Special" Drivers

Drivers that do not fit anywhere else.

dictionary	**In Progress**	A place to store dictionaries of text data, such as area detector headers.
external_command	**Working**	Runs an external process from a database entry for things like special initialization steps.