DOC223

MEIS CONTROL SYSTEM

Register Server implementation for Multiplex System access

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Multiplex System (MPX) Register Server

The **MPX** register server is an implementation of the generalised **Eurogam** register server concept which contains register classes specific to the requirements of Multiplex System access. For details of the general **Eurogam Register Server** the **Eurogam** documents **EDOC024**, **EDOC034**, **EDOC087** and **EDOC088** should be consulted.

Definitions

format of numbers

decimal	1234
hexadecimal	0x1234 or @1234
binary	%1011

All register values are text strings unless otherwise specified.

data word bit identification

Data word bit identification uses bit 15 (for 16 bit data words) as the most significant bit and bit 0 as the least significant bit.

For a definition of the allowed forms of **register names** see **EDOC210** (**CAMAC** register server).

Initial register class

The **MPX** register server contains on startup an inbuilt set of registers. These inbuilt registers are intended primarily for test and debugging and applications using the **MPX** register server should normally define specific registers for the modules being used.

register **MPX.Address** access permitted - read and write

defines the MPX command (**f**); the MPX address (**c,a,l,b**) or MPX channel number (**c,n**); and if appropiate the device name (**d**)

write register defines values for **f,c,a,l,b,n**,& **d**

format parameter1 [parameter2 [parameter3 ....]]

parameters	-f	MPX system command
	-c	MPX crate address
	-a	MPX address
	-l	MPX data length

-b MPX data position
-n channel number
-d device name

example -f 2 -c 0x10 -a 0x400

selected parameters may be defined or redefined

example -a 0x7FE

read register returns the current values of the parameters as a text string in the same format as a complete write register

Note - this register will aways return the values of **f**,**c**,**a**,**l**,**b**,**n** & **d** used by the last **MPX** access and is thus useful as a diagnostic tool for debugging actions of defined specfic registers.

initialise register set parameters to default values (zeros)

register **MPX.Execute** access permitted - read and write

executes a MPX command using parameters currently defined via the **MPX.Address** register

write register the data supplied is taken and a MPX (write) operation executed

read register a MPX (read) operation is executed and the data obtained is returned

Note - for both register operations the value of the parameter **f** should be appropiate for the action (read or write) requested.

register **MPX.Status** access permitted - read only

holds the status byte returned by the last MPX operation

read register returned data 0xnn ie 0x1E

Note - this register will always return the status byte returned by the last **MPX** access.

register **MPX.Data** access permitted - read only

holds data used by the last **MPX** operation - either supplied (write) or returned (read)

read register returned data 0xabcd

Note- this register will always return the data used by the last **MPX** access. Dataless **MPX** operations (classes cMPX and oMPX) will not change its value.

register **MPX.Debug** access permitted - read and write

controls the server debug level

write register set the server debug level

read register return the server debug level

initialise register set the server debug level to 0 (ie off)

Debugging messages are controlled by a set of bit flags which can be Ored together to create a debug “level”. The following flags have been defined. If a flag bit is set then debug messages from the specified procedures will be produced.

0x01	MPX interface procedures (currently VME interface)
0x02	intrinsic register procedures
0x04	xMPX class procedures
0x08	cMPX class procedures
0x10	oMPX class procedures

xMPX register class

The xMPX register class is used for all single shot **MPX** accesses. The register value is a data item of length (in bits) given by the -l attribute which occupies a field in the **MPX** data word with least significant bit given by the -b attribute. Whole words can be accessed by setting the length and bit attributes to zero. The class accepts data values in decimal, hexadecimal or binary format.

Register values for the xMPX class are text strings.

register attributes

-f	MPX system command
-c	MPX crate address
-a	MPX address
-l	MPX data length
-b	MPX data position
-i	initial value
-z	data format (d (decimal), x (hexadecimal), b (binary))
-s	if = 1 returns access status as a second data item for read-register requests in the form 0xnn

default attributes : -c 0 -a 0 -l 0 -b 0 -f 8 -z x -s 0

The default attribute value is used for any attribute not defined by a write-attributes command.

MPX system command

f = 0x02	write
f = 0x04	selective set
f = 0x06	selective clear
f = 0x08	read

data format - data for write operations may be supplied in any format but the data format attribute will determine the format used when returning data from read operations.

The initialise-register operation will only write data to the **MPX** system if an initial value has been explicitly defined with the -i attribute.

cMPX register class

The cMPX register class is used for **MPX** system accesses which control external displays and meters.

register attributes

-f	MPX system command
-n	channel number

default attributes : none

The initialise-register operation causes the MPX command to be performed. The read-register and write-register operations are invalid for this class.

MPX system command -

f = 0x12	close scope channel	valid channels 0 => 4
f = 0x16	close beam scanner channel	valid channels 0 => 1
f = 0x18	hold beam scanner channel	valid channels 0 => 1
f = 0x1A	release beam channel channel	valid channels 0 => 1
f = 0x1E	close chart recorder channel	valid channels 0 => 7
f = 0x22	close meter channel	valid channels 0 => 1
f = 0x24	reset meter high water mark	valid channels 0 => 1
f = 0x26	toggle meter polarity	valid channels 0 => 1
f = 0x28	meter range up	valid channels 0 => 1
f = 0x2A	meter range down	valid channels 0 => 1

oMPX register class

The oMPX register class is used for **MPX** system accesses which open channels to external displays and meters.

register attributes

-f	MPX system command
-c	MPX crate address
-n	channel number
-d	device name

default attributes : none

The initialise-register operation causes the MPX command to be performed. The read-register and write-register operations are invalid for this class.

MPX system command -

f = 0x12	open scope channel	valid channels 0 => 4
f = 0x16	open beam scanner channel	valid channels 0 => 1
f = 0x1E	open chart recorder channel	valid channels 0 => 7
f = 0x22	open meter channel	valid channels 0 => 1