weldMARK® 3
Remote Interface

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1   INTRODUCTION

Thank you for purchasing the RAYLASE AG weldMARK® software suite. This guide will assist you in using the Remote Interface services provided by weldMARK®. The connection is made either via an RS-232 interface or via a LAN-based TCP/IP connection.

1.1   About this Manual

The Remote Interface User's Guide contains detailed information about interfacing to the Remote Interface services provided by weldMARK®. It is meant to be a reference tool. It is assumed that you have experience in programming of RS-232 ports or TCP/IP connections.

1.2   Laser Safety

Customers assume all responsibility for maintaining a laser-safe working environment. OEM customers must assume all responsibility for CDRH (Center for Devices and Radiological Health) certification.

CAUTION:

Switch on the PC, **before** switching on the laser system. In this way you can avoid an uncontrolled action of the laser when switching on the PC.

Check your application carefully before using the laser system. Faulty software can lock up the complete system without control over the laser or the scan head.

1.3   Manufacturer

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1.4   Customer Support

The RAYLASE customer service is available for your problems either in respect to the subsystem or to this manual. Before calling the customer service, please make sure you have refered to any appropriate sections in the manuals on the supplied CD, that may answer your question.

If you need further assistance call RAYLASE customer service, Monday through Friday between 8 a.m. and 5 p.m. (Central European Time).

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... ask for the customer service

2   PRINCIPLE OF OPERATION

This chapter gives an overview of the Remote Interface services provided by weldMARK®, and details on configuring weldMARK® properly to communicate with your software.

2.1   Remote Interface Concept

weldMARK® is designed as a full-featured laser marker interface package, with capabilities for editing, saving, opening and running "jobs" directly from the weldMARK® Editor interface. Although this interface is extremely powerful, it may not be desirable in all circumstances.

For this reason, weldMARK® offers the Remote Interface service. This service provides a remote program, written by the customer, the ability to take control of weldMARK®.

The remote program can load jobs, change the content of marking objects dynamically, run jobs and receive status back from weldMARK® after every command. While the remote program has control, the weldMARK® User Interface is locked, preventing the operator from making any changes to the running process.

Although jobs that contain motor control objects can be loaded, the Remote Interface does not support running jobs with motor control automation.

In operation, the external program takes control of weldMARK®, but does not initiate the actual marking cycle. This is done through the START PROCESS input on the Standard I/O card or the Start Mark input on the SPC/SPICE series of interface cards. Once the START PROCESS pin is toggled, the mark cycle begins, the mark completes, and then weldMARK® returns to wait for the START PROCESS pin to toggle again.

Although both TCP/IP and RS-232 interfaces are supported, only one may be active at a time for Remote Control.

In addition to the control commands available, there is a number of status query commands that can be used to retrieve the current status of weldMARK®. These queries can be made even if the remote computer has not taken control of weldMARK®.

2.2   Configuring the RS-232 Interface

To configure weldMARK® for the RS-232 interface, use the following steps:

○ Make sure you have a valid RS-232 port set up in Windows. If you are not sure how to do this, refer to the Windows documentation.

○ Connect a standard RS-232 cable between the computer running weldMARK® and your remote computer.

○ In weldMARK® in the main menu, select *System >Preferences…*

○ Select the *Host Interface* tab.

○ Click on *Host connection* to display the Host Interface types available.

○ Select *RS-232*.
The beside window is opened.

○ Edit the default values as desired.
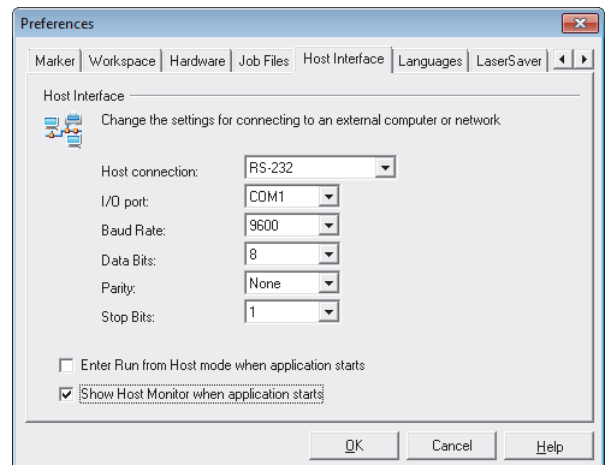
○ Select the *Show Host mode when application starts* box if you want weldMARK® to place itself in the Host mode automatically when the application starts first.

○ To disable the Remote Interface service, click on *Host connection* to display the Host Interface types available and select *disabled*.

2.3   Configuring the TCP/IP Interface

To configure weldMARK® for the TCP/IP interface, use the following steps:

○   Make sure you have a TCP/IP stack installed and set up in Windows. If you are not sure how to do this, refer to the Windows documentation.

○   In weldMARK® in the main menu, select *System >Preferences*…
The window *Preferences* is opened.

○   Select the *Host Interface* tab.

○   Click on *Host connection* to display and select *TCP/IP*.
The TCP/IP default values appear.

○   Edit the default values as desired. weldMARK® has been configured to listen on Port 350.
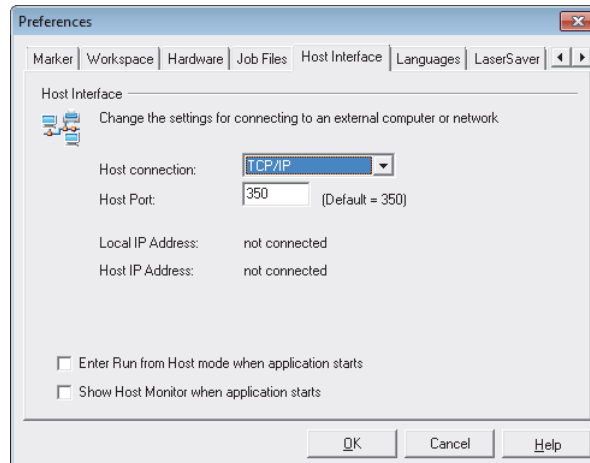
○   Select the *Show Host mode when application starts* box if you want weldMARK® to place itself in the Host ready mode automatically when the application starts first.

○   To disable the Remote Interface service, click on *Host connection* to display the Host Interface types available and select *disabled*.

2.4   Configuring the Repeat Process and External Start settings

Note: You must have either a Standard I/O card or a RLC/SP-ICE series scan head card installed to use the Remote Interface features in weldMARK®.

To configure weldMARK® for the Remote Interface, the system must be set to repeat the job continuously, and to poll the START PROCESS input pin on the Standard I/O card, or the START MARK pin on the RLC/SP-ICE card. Note that if you do not select these settings manually, they will be set for you the first time the Host loads a job.

Proceed as follows to configure the settings:

○ In weldMARK®, in the main menu click *Job >Settings...*

○ Select the *Repeat Process* tab. The adjacent window is opened.

○ Select the *Do not promt between cycles, and run indefinitely* option.
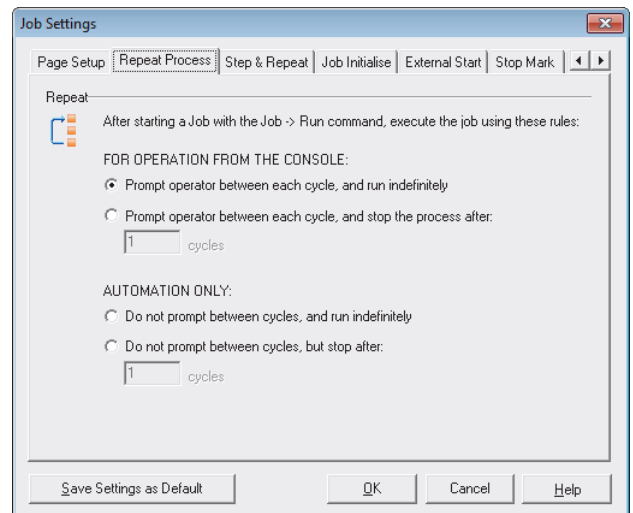
○ Select the *External Start* tab. The adjacent window is opened.

○ Select the *Wait for external start signal* option.

○ Click on drop down menu *Use I/O port* to display the available I/O ports.

○ Select the desired port. Ports are only available on the Standard I/O card or the SPC/SPICE series scan head card.
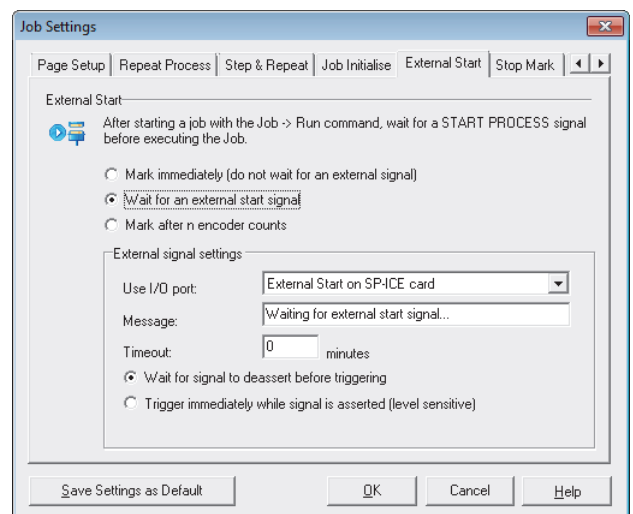
○ Enter a message in the *Message* edit box. It appears in the Host Process box while the system is waiting for the START PROCESS input to toggle.

○ Enter a *Timeout* value for the maximum waiting time. A value of zero causes an indefinitely waiting time.

○ Select *Wait for signal to deassert before triggering* to start marking on the trailing edge of the START PROCESS signal input.
Select *Trigger immediately while signal is asserted* to start marking on the leading edge of the START PROCESS signal input.

○ Click *OK* to close the Job Settings window.

2.5   Viewing the Host Interface Monitor

The Host Interface Monitor is a convenient way to view the command sequences between weldMARK® and the Host. Note that when the Host has taken control about weldMARK®, the Host Interface Monitor position on the display screen cannot be changed. So position it accordingly before taking the control about weldMARK®.

To display the Host Monitor, follow these steps:

○ In weldMARK®, in the main menu, click *View >Host Monitor*. The Host Interface Monitor window appears.
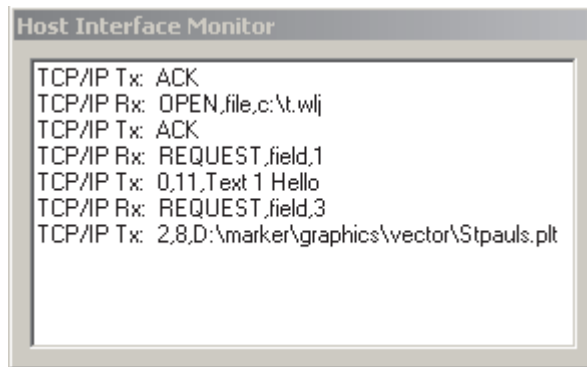
○ To close the Host Monitor, in the main menu click *View >Host Monitor*. The Host Interface Monitor window closes.

2.6   Enabling the Host mode

Before another program or computer can take control of weldMARK®, you must put weldMARK® into Host mode. Host mode is indicated when the Host Interface window is displayed.
Note: when the Host has taken control about weldMARK®, the Host Interface window position on the display screen cannot be changed. So position it accordingly before taking the control about weldMARK®.

Proceed as follows to switch weldMARK® in Host mode:

Preparation:
➔ page 6, Configuring the RS-232 Interface
➔ page 7, Configuring the TCP/IP Interface

○ Select *System >Run from Host* from the menu.

The Host Interface window appears.
The system is now ready to accept Remote Interface commands
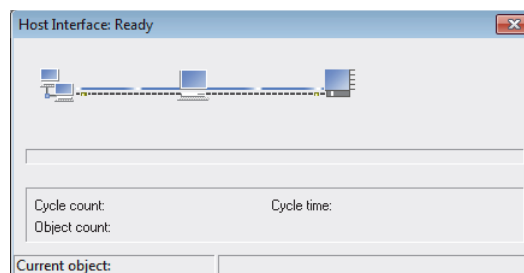
2.7   Network connection

By default, weldMARK® makes the Remote Interface service available on Port 350. This can be changed in the Host Interface setup box, if Port 350 conflicts with another installed port on your computer.

The computer on which weldMARK® is running, can be controlled via an RS-232 direct connection in the simplest case. Otherwise, control via an TCP/IP network can take place.

3   COMMANDS AND FUNCTIONS

3.1   Command Syntax

For the sake of clarity, the responses listed below each command have been listed with their descriptive error codes. In practice, the responses are returned with numerical error codes. For example, STATUS,IN_HOST_MODE is returned as STATUS,512 (➜ page 22, Return codes) for a complete listing of all return codes.

3.2   Command Set

The following list describes all the Remote Interface commands and their intended use, and is presented in alphabetical order. A description of the command parameters follows each command.

HOME

Function	All the enabled Motor Controller axes are sent in their home position.	
Responses	ACK	Acknowledged
	NOT_IN_HOST_MODE	weldMARK® must be in Host mode.
	NO_MOTOR_CONTROLLER	Motor Controller not available.
	NO_HARDLOCK HARDLOCK_NOT_ALLOWED	Either no Hardlock available or the feature not allowed with the current Hardlock key.
	ERROR,MOTOR_HOME	An error occurred while performing the Home function.
Hints	weldMARK® MUST be under host control to accept this command.	

LOAD,lasercfg,[cardno,]file

Function	Loads a laser configuration file to the specified controller card.	
Parameter	file	Full qualified name of the laser configuration file, including the path and the file name. In order to maintain compatibility between the two command options, it is assumed that the file name can not start with numbers 0...3.
	cardno	The specified control board (*cardno*) must be present. If no card number is specified, the control board 0 is addressed. The value range for *cardno* is 0..3.
Responses	ACK	Acknowledged
	UNKNOWN_QUALIFIER	Length of the parameter *file* is less then 3 characters.
	FILE_NOT_FOUND	Given path or file name not found.
	NO_SUCH_CARD	The *cardno* value is greater than the total number of available cards.
Hints	weldMARK® MUST be under host control to accept this command.	

LOAD,correctionfile,[cardno,headno,]file

Function	Loads a correction files for the specified scan head on a controller card.	
Parameter	file	Full qualified name of the correction file, including the path and the file name. Both *.txt* and *.gcd* files with defined name must be present at the defined path. In order to maintain compatibility between the two command options, it is assumed that the file name can not start with numbers 0..3.
	cardno,headno	Specified *cardno* and *headno* should be present in the system. If *cardno* and *headno* are omitted then first card and first head are assumed. The value for *cardno* and *headno* can be in the range 0...3.
Responses	ACK	Acknowledged
	UNKNOWN_QUALIFIER	Length of the parameter *file* is less then 3 characters.
	FILE_NOT_FOUND	Given path or file name not found.
	NO_SUCH_CARD	The *cardno* value is greater than the total number of available cards.
	NO_SUCH_HEAD	The *headno* value is greater than the total number of available heads.
Hints	weldMARK® MUST be under host control to accept this command.	

MODIFY,buffer,##,******

Function	Stores the string '*****' in the internal string buffer at index ##.	
Parameter	##	Number of the string buffer (value between 1 and 10)
	'*****'	string
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,NO_SUCH_BUFFER	Buffer ## out of range.
	ERROR,INVALID_TEXT	The length of the ***** string is zero, or does not contain markable characters.
Hints	Text objects within the job must have their "Source" set to *Get String from Memory buffer* to use the buffer contents.	
	weldMARK® does not need to be under host control to accept this command.	
	Calling this, will clear the previous value stored in buffer.	

MODIFY,field,##,****

Function	Modifies a field of text or barcode.	
Parameter	##	Number of field to be modified
	"*****"	New text string
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,UNKNOWN_QUALIFIER	The ## field was not an integer value.
	ERROR,NO_SUCH_FIELD	The ## field index is larger than the total number of objects loaded.
	ERROR,UNKNOWN_QUALIFIER	The length of the ***** string is zero, or does not contain markable characters.
Hints	weldMARK® MUST be under host control to accept this command.	
	The field ## corresponds to the position the object has in the Object List within the job i.e. the first object in the Object List would have an index value of 1. If the index values are not known at run time, use MODIFY buffer instead. If the field does not exist, an error is returned.	
	The marker must be OFFLINE.	

MODIFY,headoffset,cardno,headno,xoffset,yoffset

Function	Modifies the head parameter *xoffset* and *yoffset*. **IMPORTANT** Offset values set with this command are saved in the job as HeadOffset values. Be sure to reset the values to „0" if they should not be used in the job any further.	
Parameter	cardno,headno	Card and the head numbers in the range 0..3.
	xoffset,yoffset	Offset values are absolute and should be specified in bits.
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,UNKNOWN_QUALIFIER	The defined *cardno* or *headno* values are not an integer value.
	ERROR,NO_SUCH_CARD	The defined *cardno* value is greater than the total number of available cards.
	ERROR,NO_SUCH_HEAD	The defined *headno* value is greater than the total number of available heads.
Hints	weldMARK® MUST be under host control to accept this command.	
	No checking is done if the values are exceeded.	
	No checking is done if the job is loaded or running. It is up to the calling application to check that changing offset values will not disturb current marking, since the changes are effective immediately.	

MODIFY,position,##,dX,dY

Function	Modifies the position of an object by a certain x and y offset.	
Parameter	##	Number of the object to be modified
	dX, dY	Offsets in bits
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,UNKNOWN_QUALIFIER	The ## field was not an integer value.
	ERROR,NO_SUCH_OBJECT	The ## field index is larger than the total number of objects loaded.
Hints	weldMARK® MUST be under host control to accept this command.	
	Job must be loaded and the marker must be OFFLINE. If the object does not exist, an error is returned.	

MODIFY,rotation,##,dangle

Function	Rotates an object by a certain angle.	
Parameter	##	Number of the object to be rotated.
	dangle	Degree value to rotate the object. Range: -360 to 360
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,UNKNOWN_QUALIFIER	The ## field is not an integer value.
	ERROR,NO_SUCH_OBJECT	The ## field index is greater than the total number of objects loaded.
Hints	weldMARK® MUST be under host control to accept this command.	
	Job must be loaded and the marker must be OFFLINE. If the object does not exist, an error is returned.	

MODIFY,wsrotation,angle

Function	Rotates working space by a certain angle.	
Parameter	angle	Degree value to rotated the working space. Range: -360 to 360
Responses	ACK	Acknowledged
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR, ANGLE_OUT_OF_RANGE	Value *angle* is out of range -360 to 360.
Hints	weldMARK® MUST be under host control to accept this command.	
	Job must be loaded and the marker must be OFFLINE. If the object does not exist, an error is returned.	

OFFLINE

Function	Commands the laser to stop marking immediately, and returns the laser to the MARKER_OFFLINE state.	
Responses	ACK	Acknowledged
	ERROR,ALREADY_OFFLINE	Marker is already offline.
Hints	weldMARK® MUST be under host control to accept this command.	

ONLINE

Function	Commands the marker to start the marking process.	
Responses	ACK	Acknowledged
	ERROR,ALREADY_ONLINE	Marker is marking or waiting for external start signal.
	ERROR,NO_JOB_LOADED	No job loaded.
	ERROR,INTERLOCKS_OPEN	An interlock port on the interlock I/O card is signaled.
	ERROR,NO_SCANCARD	There is no scan head card installed in computer.
	ERROR,NO_HARDLOCK	No Hardlock detected.
	ERROR,NO_IOCARD	No I/O card installed in computer.
	ERROR,STEP_REPEAT_INVALID	The values saved in the job for „step and repeat" will result in an invalid object position.
	ERROR,TEXT_SOURCE_INVALID	A text object was saved with a Source value incompatible with the host interface.
	ERROR,TEXTMERGE_INVALID	There was an error while processing a TextMerge file.
	ERROR,OBJECT_OUT_OF_BOUNDS	There is an object in the job that is outside the legal marking field.
Hints	weldMARK® MUST be under host control to accept this command.	
	System will start polling external start port immediately and enter MARKER_ONLINE state. This call automatically sets the external start flag to true, and sets the repeat mode to repeat indefinitely.	

OPEN,file,######

Function	Opens a file.	
Parameter	"####"	Text string describing the file to be opened.
Responses	ACK	Acknowledged
	ERROR,FILE_NOT_FOUND	The file was not found at the indicated path location, or there was an error while opening the file.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
	ERROR,UNKNOWN_QUALIFIER	The file path was less than 3 characters in length.
Hints	weldMARK® MUST be under host control to accept this command.	
	The text string must be a fully qualified UNF file path. If the file cannot be found or is corrupt, an error code is returned.	

REQUEST,data,cyclecount

Function	Requests weldMARK® to return the number of current job repetitions.	
Parameter	cyclecount	Indicates the number of full cycles, including „step and repeat".
Responses	DATA,*x*	„*x*" is the current cycle count.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,cycletime

Function	Requests weldMARK® to return the current cycle time.	
Parameter	cycletime	Elapsed time to do all marks within a single cycle.
Responses	DATA,*x*	„*x*" is the current cycle time.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,jobname

Function	Requests weldMARK® to return the name of the currently loaded job.	
Responses	DATA,*filepath*	*filepath* is the fully qualified path to the currently loaded job file.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,objectnumber

Function	Requests weldMARK® to return the object number of the currently marked object.	
Responses	DATA,*x*	*x* is the currently marked object index in the range: 0 ... last object index.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	
	If a job is not running the returned value for current object index is 0.	

REQUEST,data,partcount

Function	Requests weldMARK® to return the number of marked objects.	
Parameter	partcount	Part count of individual mark within a cycle.
Responses	DATA,*x*	„x" is the current part count.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,parttime

Function	Requests weldMARK® to return the current part mark time.	
Parameter	parttime	Elapsed time to do a single mark within an overall cycle.
Responses	DATA,*x*	„x" is the current part time.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,version

Function	Requests weldMARK® to return its version number.	
Responses	DATA,*x*	„x" is the version number.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,data,user

Function	Requests weldMARK® to return the User currently logged on to the current Windows session.	
Responses	DATA,*username*	*username* is the currently logged in user.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,field,##

Function	Requests data from a field of text, barcode or graphic.	
Parameter	##	Number of the field to be queried.
Responses	DATA,*field#,objecttype,data*	*field#* is the field# of the object
		objecttype ➜ page 23, Object Types.
		data is the string value for text and barcodes and the graphic file path for a graphic object.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized
	ERROR,UNKNOWN_QUALIFIER	The ## field was not an integer value.
	ERROR,NO_SUCH_FIELD	The ## field index is larger than the total number of objects loaded.
Hints	weldMARK® must be under host control to accept this command.	
	The marker must be OFFLINE. If the field does not exist, an error is returned.	

REQUEST,status,interface

Function	Returns the current status of the host interface.	
Responses	STATUS,IN_HOST_MODE	Host is in control of weldMARK®.
	STATUS,HOST_NOT_READY	Not available for host command.
	STATUS,HOST_READY	Available for host command.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,status,marker

Function	Returns the current system and weldMARK® software status.	
Responses	STATUS,HOST_NOT_READY	Cannot get status of marker because host is not available for host command.
	STATUS,INTERLOCKS_OPEN	An interlock port on the interlock I/O card is signaled.
	STATUS,MARKER_ONLINE	Marker is marking or waiting for external start signal.
	STATUS,MARKER_OFFLINE	Job is loaded and marker is ready to accept ONLINE command or MODIFY command.
	STATUS,NO_JOB_LOADED	No job loaded.
	STATUS,ERROR_PROCESS	There was an error in the ONLINE mode. This error will be cleared after it is read once, and if all OK, the next response will be STATUS,MARKER_OFFLINE.
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,status,job

Function	Requests weldMARK® to return the current job status to enable detection if a job is being paused. This can happen while the job is waiting for something, like an External Start Signal, or when executing an Automation object.	
Responses	JOBSTATUS,*Job status message*	Full list of job status messages.
	ERROR,UNKNOWN_VERB	First word in command line not recognized.
	ERROR,UNKNOWN_NOUN	Second word in command line not recognized.
Job status messages	<empty string> An empty string is returned as the job status message in host and local mode, if a job is not running. It is irrespective of whether the job is loaded or not. Even after a job has finished running an empty string is returned.	
	LASER ON - processing:<ObjectName> When a job is marking an object, it is indicated by "LASER ON – processing:" string with the object name appended.	

	Waiting ...
	Default values for the string are:
	- "Waiting for external start signal..." for a job and
	- "Waiting on port" for an Automation object within a job.
	NOTE: These messages can be changed either for each object or on a system basis. In which case it will be taken as default value and will affect all objects and jobs. It can be changed at various points:
	- Job >Settings >External Start
	- Object >Defaults >Wait for External Start
	- Object >Properties >Settings
	- In Registry:
	    for a Wait for external start before a job is executed change
	      HKCU\Software\RAYLASE\weldMARK\ProcDefaults\ExternalStartMsg
	    and for 'Wait on port' object in
	      HKCU\Software\RAYLASE\weldMARK\ObjDefaults\WaitOnPort\message	

	AUTOMATION - processing: ObjectName When a job is waiting for an automation object to be executed, it is indicated by "AUTOMA-TION – processing:" string with the object name appended.	
	LASER ON &&AUTOMATION - processing: ObjectName When a job is waiting for a combined marking object with automation to be executed (like marking text with Rotary indexer).	
	Calibrating scan head. Please wait... When a job is waiting for the Autocalibration to be executed.	
Hints	weldMARK® does not need to be under host control to accept this command.	

REQUEST,status,marker

Function	Returns the current status of the laser marker and the weldMARK® software	
Responses	STATUS,HOST_NOT_READY	Cannot get status of marker because host is not available for host command.
	STATUS,INTERLOCKS_OPEN	An interlock port on the interlock I/O card is signaled.
	STATUS,MARKER_ONLINE	Marker is marking or waiting for external start signal.
	STATUS,MARKER_OFFLINE	Job is loaded and marker is ready to accept ONLINE command or MODIFY command.
	STATUS,NO_JOB_LOADED	No job loaded.
	STATUS,ERROR_PROCESS	There was an error in the ONLINE mode. This error will be cleared after it is read once, and if all OK, the next response will be STATUS,MARKER_OFFLINE.
Hints	weldMARK® does not need to be under host control to accept this command.	

RUN

Function	Commands the laser system to start the marking process.	
Responses	ACK	Acknowledged
	ERROR,ALREADY_ONLINE	Laser is marking or waiting for external start signal.
	ERROR,NO_JOB_LOADED	No job is loaded.
	ERROR,INTERLOCKS_OPEN	An interlock port on the interlock I/O card is signaled.
	ERROR,NO_SCANCARD	There is no scan head card installed in computer.
	ERROR,NO_HARDLOCK	No hardlock detected.
	ERROR,NO_IOCARD	No I/O card installed in computer.
	ERROR,STEP_REPEAT_INVALID	The values saved in the job for „step and repeat" will result in an invalid object position.
	ERROR,TEXT_SOURCE_INVALID	A text object was saved with a source value incompatible with the host interface.
	ERROR,TEXTMERGE_INVALID	There was an error while processing a TextMerge file.
	ERROR,OBJECT_OUT_OF_BOUNDS	An object of the job is out of the marking field.
Hints	weldMARK® must be under host control to accept this command.	
	The system will execute the currently loaded job immediately and enter the MARKER_ONLINE state. This call does not set the external start flag to „true" automatically, and does not set the repeat mode to „repeat indefinitely". The current job settings will be used for these two parameters.	

SET,control,host

Function	Puts weldMARK® into Host mode.	
Responses	ACK	Acknowledged
	ERROR,ALREADY_IN_HOST_MODE	weldMARK® is already in Host mode.
	ERROR,HOST_NOT_READY	weldMARK® cannot switch to Host mode because the *Allow Host Control* check box in weldMARK® is cleared.
Hints	weldMARK® cannot be under host control to accept this command.	
	All user input via the console is disabled.	

SET,control,local

Function	Stops the external control of weldMARK®.	
Responses	ACK	Acknowledged
	ERROR,ALREADY_IN_LOCAL_MODE	Host is already in local mode.
	ERROR,MARKER_ONLINE	Laser is marking or waiting for external start signal.
Hints	weldMARK® must be under host control to accept this command.	

3.3   Return codes

The following numerical response codes are returned by weldMARK®:

Numerical Code	Descriptive Code
204	UNKNOWN_VERB
205	UNKNOWN_NOUN
206	UNKNOWN_QUALIFIER
209	INVALID_STRING
221	NO_JOB
231	NO_SUCH_OBJECT
232	NO_SUCH_CARD
233	NO_SUCH_FIELD
234	NO_SUCH_HEAD
235	NO_SUCH_BUFFER
236	NOT_IN_HOST_MODE
240	ALREADY_OFFLINE 240
241	ALREADY_ONLINE
242	NOT_OFFLINE
243	NOT_ONLINE
244	ALREADY_IN_HOST_MODE
245	ALREADY_IN_LOCAL_MODE
246	ANGLE_OUT_OF_RANGE
250	SERVER_NOT_READY
400	INTERNAL_ERROR
510	HOST_READY
511	HOST_NOT_READY
512	IN_HOST_MODE
2000	FILE_NOT_FOUND
2010	FILE_TYPE_NOT_SUPPORTED
2300	MARKER_OFFLINE
2301	MARKER_ONLINE
2350	NO_MARKER_LIBRARY
3000	INTERLOCKS_OPEN
3010	NO_SCANCARD
3011	NO_HARDLOCK
3012	NO_IOCARD
3013	NO_LASER_INIT
3014	HARDLOCK_NOT_ALLOWED
3020	INVALID_STEP_REPEAT
3021	INVALID_TEXT_SOURCE
3022	TEXTMERGE_ERROR
3040	OBJECT_OUT_OF_BOUNDS
3041	NOT_ALLOWED_WITH_CURRENT_HARDWARE_KEY

When the remote system tries to connect to weldMARK®, instead of numeric values, following response strings are returned: "Host Interface: Ready" or "Host Interface: Access Denied".

3.4   Object Types

Note: Not all of these object types are available through the host Interface. They are included here for completeness.

The following object types are returned by the weldMARK® Editor:

Numerical Code	Object Description
7	MCL Graphic
8	EPS Graphic
9	DXF Graphic
10	System Line
11	System Rectangle
12	System Polygon
13	PLT Graphic
14	EMF Graphic
15	WLO Graphic
16	Text
17	System Drill
18	Barcode 39
19	Barcode CodaBar
20	Barcode 93
21	Barcode 128
22	Barcode 2 of 5
23	Barcode PostNET
24	Barcode UPC
25	Barcode EAN
26	DataMatrix
27	QRCode
28	Bitmap Graphic
29	Wait On Port I/O
30	Set Port I/O
31	Time Delay
32	Message Box
33	Generic Motor Controller
34	XY Table Controller
35	Rotary Indexer Controller
36	Laser Lift Controller

4   EXAMPLE PROGRAM

An example program is provided to illustrate how to initiate a session with weldMARK®. It shows how to adjust an object in the loaded job, how to run a job and how to close the session.

4.1   C++ Example

The following pseudo-code uses an application defined function called SendToSocket(), which represents a method of outputting text either from the RS-232 interface or TCP/IP ports and receiving a response as it's return value.

```
//Aquire weldMARK®
SendToSocket ("SET,control,host");
//Make sure we have control
if (SendToSocket ("REQUEST,status,interface")!=" STATUS,512")return ERROR;
//Load a job
SendToSocket ("OPEN,file,c:\\programme\\raylase\\weldmark\\job\\test.wmj");
//Make sure job has loaded properly
if (SendToSocket ("REQUEST,status,marker")!=" STATUS,2300")return ERROR;
//Change the text in the object at index position 2
SendToSocket ("MODIFY,field,2,"Hello World");
//Put weldMARK into the ONLINE mode, waiting for START PROCESS to toggle
SendToSocket ("ONLINE");
//Verify we are in ONLINE MODE
if (SendToSocket ("REQUEST,status,marker")!=" STATUS,2301")return ERROR;
//Mark some parts
.
.
//Stop polling the START PROCESS input
SendToSocket ("OFFLINE");
//Release weldMARK
SendToSocket ("SET,control,local";
```

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