NAME

gsi − handle special functions of GSI300 terminal

SYNOPSIS

gsi [**+12**] [−*n*] [−**d***t,l,c*]

DESCRIPTION

Gsi supports special functions, and optimizes the use, of the GSI300 (DASI300 or DTC300) terminal. It converts half-line forward, half-line reverse, and full-line reverse motions to the correct vertical motions. It also attempts to draw Greek letters and other special symbols. It permits convenient use of 12-pitch text. It also reduces printing time (5 to 70%). *Gsi* can be used to print equations neatly, in the sequence:

neqn file **...** | nroff | gsi

WARNING: if your terminal has a PLOT switch, make sure it is turned ON before *gsi* is used.

The behavior of *gsi* can be modified by the optional flag arguments to handle 12-pitch text, fractional line spacings, messages, and delays.

+12 permits use of 12-pitch, 6 lines/inch text. GSI terminals normally allow only two combinations: 10-pitch, 6 lines/inch, or 12-pitch, 8 lines/inch. To obtain the 12-pitch, 6 lines per inch combination, the user should turn the PITCH switch to 12, and use the **+12** option.

−*n* controls the size of half-line spacing. A half-line is by default equal to 4 vertical plot increments. Because each increment equals 1/48 of an inch, a 10-pitch line-feed requires 8 increments, while a 12-pitch line-feed needs only 6. The first digit of *n* overrides the default value, thus allowing for individual taste in the appearance of subscripts and superscripts. For example, *nroff(I)* half-lines could be made to act as quarter-lines by using **−2**. The user could also obtain appropriate half-lines for 12-pitch, 8 lines/inch mode by using the option **−3** alone, having set the PITCH switch to 12-pitch.

−**d***t,l,c* controls delay factors. The default setting is **−d**3,90,30. GSI terminals sometimes produce peculiar output when faced with very long lines, too many tab characters, or long strings of blankless, non-identical characters. One null (delay) character is inserted in a line for every set of *t* tabs, and for every contiguous string of *c* non-blank, non-tab characters. If a line is longer than *l* bytes, 1+(total length)/20 nulls are inserted at the end of that line. Items can be omitted from the end of the list, implying use of the default values. Also, a value of zero for *t (c)* requests 2 null bytes per tab (character). The former may be needed for C programs, the latter for files like */etc/passwd*. Because terminal behavior varies according to the specific characters printed and the load on a system, the user may have to experiment with these values to get correct output. The **−d** option exists only as a last resort for those few cases that do not otherwise print properly. For example, the file */etc/passwd* may be printed using **−d**3,30,5. The value **−d**0,1 is a good one to use for C programs that have many levels of indentation.

Note that the delay control interacts heavily with the carriage return and line feed delays being used at the time: see *GSI300(VII)*. The *stty(I)* modes **nl0 cr2** or **nl0 cr3** are recommended for most uses.

NOTE: *gsi* always synchronizes its buffering so that it can be used with the *nroff* **−s** flag or **.**rd requests, when it is necessary to insert paper manually or change fonts in the middle of a document. Instead of hitting the RETURN key in these cases, you must use the LINE FEED key to get any response.

In many cases, the following sequences are equivalent:

nroff −T300 files **...** and nroff files **...** | gsi
nroff −T300−12 files **...** and nroff files **...** | gsi +12

The use of *gsi* can thus often be avoided unless special delays or options are required.

Here are the *neqn(I)* names and resulting output for the special characters supported:

Name	Symbol	Name	Symbol
alpha	α	OMEGA	Ω
beta	β	partial	∂
delta	δ	phi	ϕ
DELTA	Δ	PHI	Φ
epsilon	ε	psi	ψ
eta	η	PSI	Ψ
gamma	\	pi	π
GAMMA	Γ	PI	Π
infinity	∞	rho	ρ
integral	∫	sigma	σ
lambda	λ	SIGMA	Σ
LAMBDA	Λ	tau	τ
mu	μ	theta	θ
nabla(del)	∇	THETA	Θ
not	—	xi	ξ
nu	ν	zeta	ζ
omega	ω		

SEE ALSO

450(I), graph(I), greek(V), GSI300(VII), mesg(I), neqn(I), plot(I), stty(I), tabs(I)

BUGS

Some characters in the above table can't be correctly printed in column 1 because the print head cannot be moved to the left from there. If your output contains much Greek and/or reverse line feeds, use friction feed instead of a forms tractor. Although good enough for drafts, the latter has a tendency to slip when reversing direction, distorting Greek characters, and misaligning the first line after a long set of reverse line feeds.

Gsi is definitely *not* usable with the ''second generation'' models of the GSI300, such as the GSI300S or DASI450.