TIC v7 and CTL v7.xx Data Release Notes

This is an older version of the TESS Input Catalog. It is only available for bulk downloads. The TIC Version 8.2 is the current version, please consult that documentation.

Last Updated 2018-10-04

The data release notes are updated by the TESS Stellar Parameter Working Group as issues are found.

Changes since last version of the release notes (changes bolded in text below):

2018-10-04: 1) New section added 'Updates to the TICv7 CTL''

2) CTL 7.02 is the new and current version of the TICv7 CTL. Description has been added to section 'Updates to the TICv7 CTL.' In addition, csv tables containing the TIC IDs of targets that were removed or added in CTL 7.02 are included in this section for reference.

3) Update to 'Known Issues and Quirks' advising users to disregard stellar parameters for stars appearing in CTL 7.01, which were removed from CTL 7.02

2018-08-20: 1) Description added for disposition (column 86) and duplicate ID (column 87) columns.

2) Update to changes compared to TICv6 to denote the disposition (column 86) and dup_id (column 87) columns now have entries. Previously, these columns were null everywhere.

3) Added definition of future ARTIFACT objects (defined in column 86: disposition) to 'Planned Improvements to Future Versions.'

Introduction

This delivery contains the seventh version of the TESS Input Catalog (TIC) produced entirely by the Target Selection Working Group (TSWG), and was finalized and prepared for delivery to the TESS Science Office (TSO) on 2018 June 17.

The delivery has a number of minor issues (see below) which have not been fixed in this version due to time constraints during preparation. Specific details of the method of production and the contents of this TIC will be described in the full TICv7 Documentation can currently be found on the arXiv at (https://arxiv.org/abs/1706.00495).

The design is the same as TICv6, in that the columns and their format are the same, but there have been additional changes compared to previous versions of the TIC. TIC IDs have not been changed, and all future deliveries of the TIC will use the same IDs for specific objects. New objects added to the TIC will always receive new IDs. Objects may be removed from the TIC, if they are found to be spurious, but TIC IDs will always be unique and a new TIC object will never receive the ID of an old TIC object.

Updates to the TIC-7 CTL

The current version of the TIC-7 CTL is version 2. The delivery occurred on 2018 August 29.

1. **The Hot Subdwarf list was inappropriately excluded from CTL 7.01, and has been added to CTL 7.02. The list of hot subdwarfs is provided here.**
2. **There were ~96K stars which had proper motions in TIC-5 (and were identified as RPMJ dwarfs in TIC-5) which have been removed from CTL 7.02. These stars were removed from CTL 7.02 because they no longer have trustworthy proper motions due to TIC-7s updated preference schema. The list of targets removed due to untrustworthy proper motions is provided here.**
3. **There were ~2400 stars which were identified as giants using Gaia or Hipparcos parallax values, and these objects have been removed from CTL 7.02. The list of targets removed due to being identified as giants via updated parallax values is provided here.**

Changes compared to TIC-6

This delivery contains major changes in computed quantities compared to TICv6. It should be noted that the methods used to estimate a variety of stellar parameters are still under active development and can be affected by poor catalog photometry when there is no acceptable alternative photometry for a given star. The major changes compared to previous versions are:

1. Nearly all coordinates have been computed for epoch 2000.0, the exceptions are POSFlag (Column 16) hotsubdwarf (40 stars), and gicycle1 (1692 stars) for which an epoch for the coordinates was not provided to the Target Selection Working Group. For stars having been Gaia DR1 multiples in TICv6 (POSFlag tmmgaia) we reverted to the 2MASS coordinates of the main component, and propagated the epoch given in 2MASS to 2000.0. Ecliptic and galactic coordinates (Column 25-28) have the same epoch as RA and Dec (Column 14 and 15).
2. Targets from the asteroseismology list, previously missing in the TIC, have been added to the TIC (278 stars).

3. The disposition (column 86) and duplicate_id (column 87) columns are no longer columns without entries in TICv7.
4. CTL6 stars with POSFlag (Column 16) hip and lepine have been rematched. 37 duplicates were identified. These stars were in TIC6 twice, once for hipparcos and once for 2MASS. Duplicates and artifacts have been deleted from the CTL and flagged as such in TIC. The disposition and duplicate_id column (Column 86 and 87) point to the valid TIC-entry for every duplicate. The artifacts are stars from an earlier version of Superblink which do not occur in any later version of Superblink.
5. The 329 Hipparcos stars which are not in the CTL, have been propagated to epoch 2000.0, but have not been rematched. It is possible many of these stars are duplicates, but due to time constraints, they could not be matched by hand. These will be updated with the Gaia DR2-based TIC-8.
6. All CTL-stars now have a contamination ratio. Where a priority could not be computed due to missing information, the contamination ratio may serve as a guide for the suitability of target selection.
7. The 13 stars in TIC-6 which did not have TESS magnitudes, now have proper non-null values.
8. Stars in the specially curated cool dwarf list were updated, and their stellar parameters have changed. Users are encouraged to double check the stellar parameters for these stars have been updated with the SPflag = 'cdwrf' (Column 64).
9. Stars in the specially curated known planet host list now have their stellar parameters updated. Users are encouraged to investigate these parameters using the SPflag = 'kplnt' (Column 64).
10. The legacy SPflag = 'allen', have been replaced with 'splin' to properly reflect the source of the stellar parameters. Similarly, SPflag = 'spect' has been replaced with 'spec.'
11. Stars in TICv6 which had luminosity errors larger than the luminosity value, now show luminosity errors equal to the luminosity value.

Notes on the individual columns

No. Name Notes

1 TICID A unique identifier for every object in the TIC. The ID is unique and permanent. If an object is removed from the TIC in later versions, a new object will never inherit an old ID.

2 Version This column denotes the date YYYYMMDD, in which the TIC was finalized and prepared for delivery.

7 SDSS The values given are the 64-bit "objID" values, not the IAU-format "SDSS J" identifiers.

9 GAIA Gaia IDs in TIC-6 are included for stars which are found in the Gaia-provided Gaia-2MASS look-up table. For TIC stars with more than one associated Gaia magnitude, the ID of the brightest matching Gaia source is provided.

10 APASS APASS stars do not have an identifier, only coordinates. We use the primary key of an internal TESS version of the APASS database table as a proxy identifier.

16 Posflag Flag to denote the source of a given TIC object's position.

hip - stellar source is hipparcos

cooldwarfs - stellar source is the cool dwarf list

2mass - stellar source is 2MASS

lepine - Lepines All-sky Catalog of Bright M Dwarfs (2011)

tmgaia - stellar source from Gaia with unique 2MASS match

tmmgaia - stellar source from Gaia without unique 2MASS match

hotsubdwarf - stellar source is the hot subdwarf list

gicycle1 - stellar source is the GI cycle 1 program

2MASSEXT - extended source from 2MASS extended source catalog

17 pmRA The right ascension proper motions, in order of preference, are: (1) Gaia-TGAS, (2) Superblink, (3) Tycho-2, (4) Hipparcos. (5-7) Stars only found to have proper motions in UCAC4, UCAC-5 or HSOY were subject to a new set of requirements. Total UCAC-4 proper motion > 1800 mas/yr; total UCAC-5 proper motions > 200 mas/yr and < 1800 mas/yr; total HSOY proper motion < 200 mas/yr. If a star did not have a proper motion in these catalogs, it is not provided.

18 pmRA_e The right ascension proper motion errors are taken directly from the given proper motion catalog except in the case of SuperBlink, which in its delivered state, does not provide proper motion errors. In this case, we adopt an error of 2 mas/yr for stars with updated proper motions from Gaia and 8 mas/yr for stars without updated proper motions from Gaia.

19 pmDec See notes for column 17.

20 pmDec _e See notes for column 18.

22 plx The parallax values, in order of preference, are: (1) Gaia-TGAS, and (2) Hipparcos. Some values are negative because of the way the parallaxes were measured in TGAS and Hipparcos.

29 Bmag Johnson B magnitude. When a Johnson B magnitude was not found in one of the optical catalogs, the TIC reports a Johnson B derived from the USNO-A2.0 magnitude given in the 2MASS catalog.

31 Vmag Johnson V magnitude. Observed V magnitudes are preferred when they are converted from Tycho Vt or Hipparcos. We now calculate a Johnson V magnitude from a G-Ks color for stars which do not have a reliable observed Johnson V magnitude.

59 Gmag Gaia magnitudes are now included for all stars with such values in Gaia DR-1.

61 Tmag This column is never NULL. The Tmag values are typically based on relations that depend on J and V-Ks or J-Ks (see column 63 for method flag). TESS magnitudes for objects for which only poor catalog photometry was available were computed simply as offsets from a reference magnitude (see Documentation Section 2.2.2).

63 TESSflag These flags denote which relation or catalog provides the TIC TESS magnitude. See TIC-6 Documentation Section 2.2.1 for details of each method. While most of these relations (which are used for most Tmag values) are only appropriate for dwarf stars, some are applicable to giants. Extended objects were treated as if they were dwarfs. In general the dwarf relations are strictly valid between specific color ranges and tend to be less accurate for very blue stars (J-Ks < -0.1) or very red stars (J-Ks > 1). Full descriptions can be found in Appendix C of the documentation:

gaiak - magnitude calculated from G and 2MASS Ks

gaiaj - magnitude calculated from G and 2MASS J

joffset2 - magnitude calculated from 2MASS J and an offset (+1.75 for J-Ks > 1)

hipvmag - magnitude calculated Hipparcos V magnitude

gaiaoffset - magnitude calculated from G and an offset

hoffset - magnitude calculated from 2MASS H offset

vjh - magnitude calculated from V and 2MASS J-H

jhk - magnitude calculated from 2MASS J-Ks

vjk - magnitude calculated from V and 2MASS J-Ks

hotsubdwarf - magnitude adopted from hot subdwarf list

vk - magnitude calculated from V and 2MASS Ks

joffset - magnitude calculated from 2MASS J offset (+0.5 for J-Ks < -0.1)

gaiav - magnitude calculated from G and V

tmvk - magnitude calculated from V and 2MASS Ks (same as vk)

from_apass_i - magnitude from cool dwarf list (Muirhead et al 2017)

from_sdss_ik - magnitude from cool dwarf list (Muirhead et al 2017)

gaiah - magnitude calculated from Gaia and 2MASS H

jh - magnitude calculated from 2MASS J-H

cdwarf - magnitude from cool dwarf list (Muirhead et al 2017)

bpjk - magnitude calculated from photographic B and 2MASS J-Ks

voffset - magnitude calculated from V and offset

koffset - magnitude calculated from 2MASS Ks and offset

wmean_vk_jhk - magnitude from cool dwarf list (Muirhead et al 2017)

lepine - magnitude from Lepine catalog

gicycle1 - magnitude from GI Cycle 1 proposal

from_sdss_i - magnitude from cool dwarf list (Muirhead et al 2017)

64 SPFlag These flags denote the origin of stellar parameters:

cdwrf - mass and radius adopted from the Cool Dwarf list

hotsdwrf - mass and radius taken from the Hot Subdwarf list

tplx - parameters computed from measured TGAS parallax

hplx - parameters computed from measured HIP parallax

spec - parameters computed using Torres et al. 2010, A&ARv, 18, 67

spline - parameters computed from unified spline relations

kplnt - parameters are adopted from the Known Planet List

65 Teff The effective temperatures come from one of four sources, in the following order of preference: (1) the Cool Dwarf list or the Hot Subdwarf list or Known Planet List; (2) spectroscopic catalogs (see Column 64); (3) dereddended V-Ks color; and (4) non-dereddened V-Ks color. We no longer allow stars with effective temperature not corrected for reddening to enter the CTL, except for stars in the bright star list.

66 e_Teff The SPOCS and GALAH catalogs do not provide uncertainties for effective temperatures; 25K and 41K were assigned, respectively, based on the reported statistical error from those catalogs.

67 Logg Surface gravity is calculated using the nominal formula: log10(G*M * Msun/(R * Rsun)^2). Where Msun is the mass of the Sun, G is the gravitational constant, Rsun is the Radius of the Sun, M is the mass of the star (column 73) and R is the radius of the star (column 71). Some stars may have unphysical log(g) values, such as log(g) > 4.8. If the star's stellar characteristics were calculated from de-reddened effective temperature or from a spectroscopic temperature, their priorities have been set to 0 to not prioritize stars with low quality stellar characteristics but the log(g) value remains to keep the TIC internally consistent.

68 e_Logg For stars which do not have spectroscopic log(g) measured, we define the error in the surface gravity as sqrt((M_e/M)^2+(2*R_e/R)^2), where M is the mass of the star (column 73), M_e is the mass error (column 74), R is the radius of the star (column 71) and R_e is the radius error of the star (column 72). For stars with spectroscopic log(g) from a single observation, the error was copied. For stars with multiple observations in the same catalog, the error listed in the TIC is a combination of each single observation's error added in quadrature. The SPOCS and GALAH catalogs do not provide uncertainties for surface gravities; 0.028 and 0.17 dex were assigned, respectively, based on the reported statistical error from those catalogs.

70 e_M/H For stars with spectroscopic metallicity from a single observation, the error was copied from the relevant catalog. For stars with multiple obs ervations in the same catalog, the error listed in the TIC is a combination of each single observation's error added in quadrature. The SPOCS and GALAH catalogs do not provide uncertainties for metallicities; 0.10 and 0.05 dex were assigned, respectively, based on the reported statistical error from these catalogs.

71 Radius The stellar radii were estimated using a variety of techniques, in the following order of preference: (1) radii provided by the specially curated Cool Dwarf list or the Hot Subdwarf list; (2) using the Gaia parallax and bolometric corrections; (3) spectroscopic relations from Torres et al. 2010, A&ARv, 18, 67; and (4) a unified relation based on measured radii for eclipsing binaries as well as simulations using Galactic structure models.

73 Mass If an object's mass is provided in the specially curated cool dwarf list or hot subdwarf listit is included in the TIC. Otherwise, the stellar masses were estimated using an unified relation based on measured masses for eclipsing binaries as well as simulations using Galactic structure models (see section 3.2.2 in the full documentation for details).

75 Rho The density in solar units is calculated using the formula M/R^3, where M is the mass of the star (column 73) and R is the radius of the star (column 71).

76 Rho_e The error in the density is calculated using the following formula: 3.0*Rho*(R_e/R), where Rho is the density (column 75), R_e is the error in the radius (column 72) and R is the radius of the star (column 71).

77 LumClass This is a boolean dwarf flag. If this is set, LumClass = DWARF, or otherwise GIANT. SUBGIANT is not used at present. However, the DWARF flag for TIC-6 effectively means that the star is either a dwarf or a subgiant, based on reduced proper motion cuts.

78 Lum The luminosity is calculated using the following formula and defined in solar units: R^2*(Teff/5772)^4, where R is the radius of the star (column 73) and Teff is the effective temperature (column 65).

79 Lum_e The error in the luminosity is calculated using the following formula: 2.0* L * (R_e / R). Where L is the luminosity (column 78), R_e is the radius error (column 74) and R is the radius (column 73). If the luminosity error was found to be larger than the luminosity, it was set to be equal to the luminosity.

82 E(B-V) Stars for which E(B-V) > 1.5 have their E(B-V) values set to a maximum of 1.5.

85 contratio The contamination ratio is defined as the nominal flux from the contaminants divided by the flux from the source. Flux contamination is calculated for all stars in the CTL. Contaminants are searched for within 10 TESS pixels of the target and the contaminating flux is calculated within a radius that depends on the target's TESS magnitude (Tmag, column 61). The PSF is modeled using a 2D-Gaussian based on preliminary PSF measurements from the SPOC. See section 3.2.3 of the full documentation for details.

86 disposition This column identifies objects which are included in the TIC, but are likely spurious. Currently, this column is populated with NULL, DUPLIC ATE, or ARTIFACT.

87 duplicate_id This column points to the TIC ID of the 'other' object in an ARTIFACT or DUPLICATE pair.

88 priority Priority of target for observation. This is a floating-point value ranging from 0 to 1, where 1 is highest priority. The priority is based on the relative ability of TESS to detect small planetary transits, and is calculated using the radius of the star, the contamination ratio, and the total expected photometric precision. Stars are given a boost factor to their priority which scales with a probabilistic model of the expected number of sectors any given star could fall in. Typically, the closer the star is to the Ecliptic North or South pole, the larger the boost factor. Stars close to the Galactic Plane (|b|<15) have been de-boosted by a factor of 0.1 since we generally have a poor understanding of their true reddening, unless they are in the specially curated Cool Dwarf list (see Muirhead et al. 2017). The formula for CTL7.01 is defined as: sqrt(Ns)/(R1.5*sigma) where Ns is the expected number of TESS sectors to observe the star; R is the radius of the star (column 71), and sigma is the expected photometric precision of the star based on the TESS magnitude (column 61) using the formulation from Sullivan et al. 2015. The priority is normalized by the priority for a star with R = 0.1 solar, Ns = 12.654 sectors, epsilon = 0 contamination and sigma = 61.75 ppm.

Some stars will have distinct priorities:

a. Stars with log(g) values that are greater than 4.8 and temperature sources from 'dered' or 'spec' have their priority values set to 0 to avoid biases from Giant stars masquerading as dwarfs.

b. Stars in the bright star list always have their priority set to 1.

c. Stars with absolute ecliptic latitudes (column 28) less than ~6 are not expected to be observed as part of the main mission due to a gap in camera coverage between the Southern and Northern observations. Therefore, their Ns values are 0 and thus the priority is 0.

d. Stars within the known planet list without a radius had their priority values set to 0.

Known Issues and Quirks:

There are a number of minor issues which have been identified by the TSWG. We expect to address these issues in a future version of the TIC. The issues include:

1. Because some stars have poor quality 2MASS photometry flags (such as ‘D’, ‘U’), offsets where applied to G, V, J, H, or Ks magnitudes to provide a more realistic TESS magnitude but may be different from the true value by a magnitude or more.
2. The error in the luminosity currently only reflects the effect of the radius error but should also include the effects of temperature.
3. In some cases the density error is larger than the density itself, these errors should be interpreted as equal to the density.
4. Due to the preference of proper motion catalogs which are based on PPMXL, there is structure in the distribution of high priority candidates mainly above declinations larger than -30 deg.
5. Stars which have ecliptic latitudes between -6 and 6 degree have priorities set to 0, unless they are in the bright star list. This “gap” in priority is meant to mimic the expected gap in camera coverage for the 2 year primary TESS mission.
6. Some bright stars may have nearby impostor stars with similar magnitudes that lie along diffraction spikes from 2MASS photometry. Users can identify these impostors by checking 2MASS quality flags for very poor photometry (such as ‘D’, ‘E’, ‘F’, ‘U’). These objects should be removed in future versions of the TIC.
7. Some stars in the cool dwarf list and the known planet host list have effective temperature which are null, but still have calculated stellar parameters. These were adopted as is from each list for consistency.
8. Stars in the known planet list which did not have a radius, had their priority values set to 0.
9. **Stars which were included in CTL7.01, but removed in CTL7.02 - see item 2 and 3 in Section ‘Updates to the TICv7 CTL’, still have stellar parameters in TICv7. These values are accepted to be unreliable, and users should disregard them. Links to tables with the appropriate TIC-ID for all of these objects can be found on MAST.**

Planned Improvements in Future Versions:

There are a number of planned improvements for the future versions of the TIC. At present these improvements include:

1. Inclusion of all known exoplanets reported at the NASA archives with a full set of CTL parameters wherever this is possible and feasible.
2. In the future, the label ARTIFACT in the disposition column may refer to non-astrophysical objects such as diffraction spikes, image ghosting, bleed trails, or other similar phenomena.

Column Number, Column Name, Column Data Type and Brief Description:

Column Number	Column Name	Data Type	Description
1	ID	I11	TESS Input Catalog identifier
2	Version	A8	Version Identifier for this entry [yyyymmdd]
3	HIP	I6	Hipparcos Identifier
4	TYC	A12	Tycho2 Identifier
5	UCAC	A10	UCAC4 Identifier
6	TWOMASS	A16	2MASS Identifier
7	SDSS	A20	SDSS DR9 Identifier
8	ALLWISE	A20	ALLWISE Identifier
9	GAIA	A20	GAIA Identifier
10	APASS	A30	APASS Identifier
11	KIC	I8	KIC Identifier
12	Objtype	A10	Object Type
13	Typesrc	A12	Source of the object
14	RA	D10.6	Right Ascension JD2000 (deg)
15	Dec	D10.6	Declination JD2000 (deg)
16	Posflag	A12	Source of the position
17	pmRA	D10.3	Proper Motion in Right Ascension (mas/yr)
18	e_pmRA	D10.3	Uncertainty in PM Right Ascension (mas/yr)
19	pmDec	D10.3	Proper Motion in Declination (mas/yr)
20	e_pmDec	D10.3	Uncertainty in PM Declination (mas/yr)
21	PMFlag	A12	Source of the Proper Motion
22	plx	D10.3	Parallax (mas)
23	e_plx	D10.3	Error in the parallax (mas)
24	PARFlag	A12	Source of the parallax
25	GalLong	D10.6	Galactic Longitude (deg)

26	GalLat	D10.6	Galactic Latitude (deg)
27	EcLong	D10.6	Ecliptic Longitude (deg)
28	EcLat	D10.6	Ecliptic Latitude (deg)
29	Bmag	E6.3	Johnson B (mag)
30	e_Bmag	E6.3	Uncertainty in Johnson B (mag)
31	Vmag	E6.3	Johnson V (mag)
32	e_Vmag	E6.3	Uncertainty in Johnson V (mag)
33	umag	E6.3	Sloan u (mag)
34	e_umag	E6.3	Uncertainty in Sloan u (mag)
35	gmag	E6.3	Sloan g (mag)
36	e_gmag	E6.3	Uncertainty in Sloan g (mag)
37	rmag	E6.3	Sloan r (mag)
38	e_rmag	E6.3	Uncertainty in Sloan r (mag)
39	imag	E6.3	Sloan I (mag)
40	e_imag	E6.3	Uncertainty in Sloan I (mag)
41	zmag	E6.3	Sloan z (mag)
42	e_zmag	E6.3	Uncertainty in Sloan z (mag)
43	Jmag	E6.3	2MASS J (mag)
44	e_Jmag	E6.3	Uncertainty in 2MASS J (mag)
45	Hmag	E6.3	2MASS H (mag)
46	e_Hmag	E6.3	Uncertainty in 2MASS H (mag)
47	Kmag	E6.3	2MASS K (mag)
48	e_Kmag	E6.3	Uncertainty in 2MASS K (mag)
49	TWOMflag	A20	Quality Flags for 2MASS
50	prox	E6.3	2MASS Nearest Neighbor
51	W1Mag	E6.3	WISE W1 (mag)
52	e_W1Mag	E6.3	Uncertainty in WISE W1 (mag)
53	W2Mag	E6.3	WISE W2 (mag)
54	e_W2Mag	E6.3	Uncertainty in WISE W2 (mag)
55	W3Mag	E6.3	WISE W3 (mag)
56	e_W3Mag	E6.3	Uncertainty in WISE W3 (mag)
57	W4mag	E6.3	WISE W4 (mag)
58	e_W4Mag	E6.3	Uncertainty in WISE W4 (mag)
59	Gmag	E6.3	GAIA G Mag (mag)
60	e_Gmag	E6.3	Uncertainty in GAIA G (mag)
61	Tmag	E6.3	TESS Magnitude (mag)
62	e_Tmag	E6.3	Uncertainty in TESS Magnitude (mag)
63	TESSFlag	A5	TESS Magnitude Flag
64	SPFlag	A5	Stellar Properties Flag
65	Teff	E6.0	Effective Temperature (K)
66	e_Teff	E6.0	Uncertainty in Effective Temperature (K)
67	logg	E6.3	log of the Surface Gravity (cgs)
68	e_logg	E6.3	Uncertainty in Surface Gravity (cgs)
69	M/H	E6.3	Metallicity (dex)
70	e_M/H	E6.3	Uncertainty in the Metallicity (dex)
71	Rad	E8.3	Radius (solar)
72	e_Rad	E8.3	Uncertainty in the Radius (solar)

73	Mass	E8.3	Mass (solar)
74	e_Mass	E8.3	Uncertainty in the Mass (solar)
75	rho	E10.3	Stellar Density (solar)
76	e_rho	E10.3	Uncertainty in the Stellar Density (solar)
77	LumClass	A10	Luminosity Class
78	Lum	E10.3	Stellar Luminosity (solar)
79	e_Lum	E10.3	Uncertainty in Luminosity (solar)
80	d	E8.1	Distance (pc)
81	e_d	E8.1	Uncertainty in the distance (pc)
82	e(b-v)	E6.3	Color Excess (mag)
83	e_e(b-v)	E6.3	Uncertainty in Color Excess (mag)
84	numcont	I6	Number of Contamination Sources
85	contratio	E8.6	Contamination Ratio
86	disposition	A10	Disposition type
87	dup_id	I10	Points to the duplicate object TIC ID
88	priority	E	CTL priority